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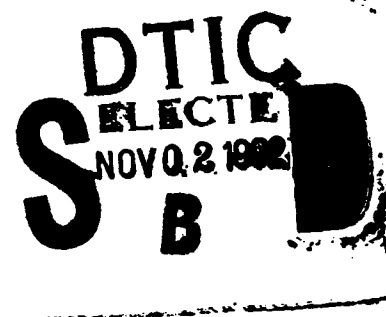
NWC TP 7194

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Coso Monitoring Program October 1990 Through September 1991

by
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and
D. E. Condon
*Comarco Weapons Support Division
for the
Public Works Department*

DECEMBER 1991



NAVAL WEAPONS CENTER
CHINA LAKE, CA 93555-6001



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FOREWORD

This report presents the status of the Coso Monitoring Program conducted for the period October 1990 through September 1991 by the Naval Weapons Center (NWC), China Lake, Calif. The investigation, funded under the NWC Coso Geothermal Development Program, is being conducted to provide baseline information on hydrology and surface geothermal activity in the Coso Hot Springs area.

Comarco personnel aided in the successful completion of the 1990-91 Coso Monitoring Program under contract N60530-88-D-0019 for the Public Works Department, NWC.

This report was reviewed for technical accuracy by S. C. Bjornstad.

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CONTENTS

Introduction	5
Temperature and Steam Flow Monitoring	8
Devils Kitchen.....	8
Well 4P-2.....	8
Well 4H-4.....	12
Wells 4A-2 and 4A-3	14
Coso Hot Springs Mudfield Photographic Investigation.....	17
Water Level Monitoring	39
Observation Wells	39
South Pool.....	39
Rainfall at Coso Resort Area and Rose Valley.....	44
Coso Hot Springs Mini-Weather Recording Station.....	51
Water Analysis of Coso Hot Springs Area Sites	51
Temperature Recordings of the Coso Resort Area Wells.....	63
Well 4H-8.....	63
Other Geothermal Activity at Coso Hot Springs	68
West Canyons.....	68
Mud Crater 4KC-8.....	68
Mud Crater 4KC-9, 4KC-10, and 4KC-11 (Resort Mudfield).....	68
Activity East of the Resort and Northeast of South Pool.....	68
Summary	70
Plans For 1992.....	70
Precision Gravity	70
Microearthquake Studies.....	70
Reference	71
Appendixes:	
A. Daily Steam Flow Data.....	73
B. Daily Temperature Data	99
C. Weather Station No. 1 Data.....	111
D. Well Temperature Data.....	127

NWC TP 7194

Figures:

1. Coso Known Geothermal Resource Area Monitoring Sites.....	7
2. Devils Kitchen Steam Flow.....	9
3. Well 4P-2 Steam Flow.....	10
4. Well 4P-2 Steam Temperature.....	11
5. Well 4H-4 Steam Flow.....	13
6. Wells 4A-2 and 4A-3 Steam Flow.....	15
7. Wells 4A- and 4A-3 Steam Temperature.....	16
8. Coso Hot Springs, 9 October 1990.....	18
9. Coso Hot Springs, 6 November 1990.....	19
10. Coso Hot Springs, 13 December 1990.....	20
11. Coso Hot Springs, 2 January 1991.....	21
12. Coso Hot Springs, 25 February 1991.....	22
13. Coso Hot Springs, 11 March 1991.....	23
14. Coso Hot Springs, 25 April 1991.....	24
15. Coso Hot Springs, 20 May 1991.....	25
16. Coso Hot Springs, 24 June 1991.....	26
17. Coso Hot Springs, 1 July 1991.....	27
18. Coso Hot Springs, 6 August 1991.....	28
19. Coso Hot Springs, 3 September 1991.....	29
20. Photographic Locations.....	38
21. South Pool Elevations, January 1980 Through September 1991.....	41
22. South Pool Elevation and Temperature.....	43
23. Comparison of Total Rainfall at Coso Basin and Rose Valley, by Year.....	49
24. Comparison of Total Rainfall at Coso Basin, Rose Valley, and NWC Sites, by Year.....	50
25. Weather Station No. 1 Barometric Pressure.....	52
26. Weather Station No. 1 Ambient Temperature.....	53
27. Weather Station No. 1 Relative Humidity.....	54
28. Ambient Temperature, Barometric Pressure, and Relative Humidity ..	55
29. Temperature Profile, 4H-8.....	64
30. Temperature Profile, Well 4K-1.....	65
31. Temperature Profile, Well 4P-1.....	66
32. Temperature Profile, Well 4A-4.....	67
33. Aerial Photo of Coso Resort Area Mudfield, 24 September 1991...	69

Tables:

1. Monitoring Functions and Locations.....	6
2. Devils Kitchen Statistical Steam Flow.....	8
3. Well 4P-2 Statistical Steam Flow.....	12
4. Well 4P-2 Statistical Steam Temperature.....	12
5. Well 4H-4 Statistical Steam Flow.....	12
6. Wells 4A-2 and 4A-3 Statistical Steam Flow.....	14
7. Wells 4A-2 and 4A-3 Statistical Steam Temperature.....	14
8. Photographic Sites and Views.....	17
9. Observation Well Water Level Data.....	40
10. South Pool Elevation and Temperature Changes.....	42

NWC TP 7194

11. Rainfall Recorded at Coso Monitoring Stations	45
12. Rose Valley Cumulative Rainfall.....	46
13. IWV, Rose Valley, and Coso Basin Rainfall Comparison, 1947 Through 1990.....	47
14. Chemical Analysis of Devils Kitchen.....	56
15. Chemical Analysis of Well OB-1.....	57
16. Chemical Analysis of Coso Well 4P-1	58
17. Chemical Analysis of Well 4K-1.....	59
18. Chemical Analysis of South Pool.....	60
19. Chemical Analysis of West Canyon Water.....	61
20. Chemical Analysis of Well 4H-4.....	62

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INTRODUCTION

The Coso Monitoring Program was initiated in 1978 to gather baseline data on the surface and near-surface geothermal activity at Devils Kitchen and Coso Hot Springs, the main thermal sites within the Coso Known Geothermal Resource Area (Coso KGRA). This report represents the fourteenth year of continual baseline data collection.

Some changes in activity were noted at the thermal sites since the last report, as well as some improvements in data collection efforts. For example, Well 4P-2 stopped geysering on 11 August 1991, and the weather station is now fully operational in a new location. These and other activities will be detailed in the individual site discussions.

The Hewlett-Packard computer and digitizer, which were previously used, have been replaced by an IBM compatible system which is faster, more accurate, more reliable and more serviceable than the previous system. A computer program was written for the Geothermal Program Office by Karen Lucas (Code 2721) that enables the new computer and digitizer to extract recorded data from both the round Barton charts and the weather station strip charts. The data points are picked off each chart at two-hour intervals and two separate files are created: two-hour readings, and daily maximum and minimum readings. To test the accuracy of the program, a random sampling was done on both styles of chart. Forty-eight points were selected from the Barton charts along with 24 points from the strip charts. These were then compared to the computer-selected values at these same points. The value difference was $\pm 0.65\%$ and $\pm 0.57\%$, respectively. This difference is an acceptable degree of accuracy which, when coupled with the convenience of the process, enables us to create several linked data-sets that will be used to better understand the relationship between thermal activity and forces acting upon it.

Monitored sites of the Coso Hot Springs area and type of data collected at each site are presented in Table 1. The location of each site is shown in Figure 1.

TABLE 1. Monitoring Functions and Locations.

Monitored sites	Continuous steam flow	Continuous water level	Period water level	Continuous steam temperature	Period steam temperature	Ambient temperature	Barometric pressure	Relative humidity	Water level photography	Water chemistry
Schober's Resort (4A-2, 3).....	X			X						
Well 4H-4.....	X									
Well 4H-8.....			X ^b		X					
Well 4P-2.....	X			X						
Well 4P-1.....		X			X					X
Well 4K-1.....			X ^b		X					X
Devils Kitchen.....	X									X
Observation Well No. 1.....		X ^a								X
Observation Well No. 2.....		X ^a								
Observation Well No. 3.....		X ^a								
South Pool.....		X ^a			X				X	X
Weather Station No. 1.....						X	X	X		

a. Weekly monitoring*b.* Less than weekly

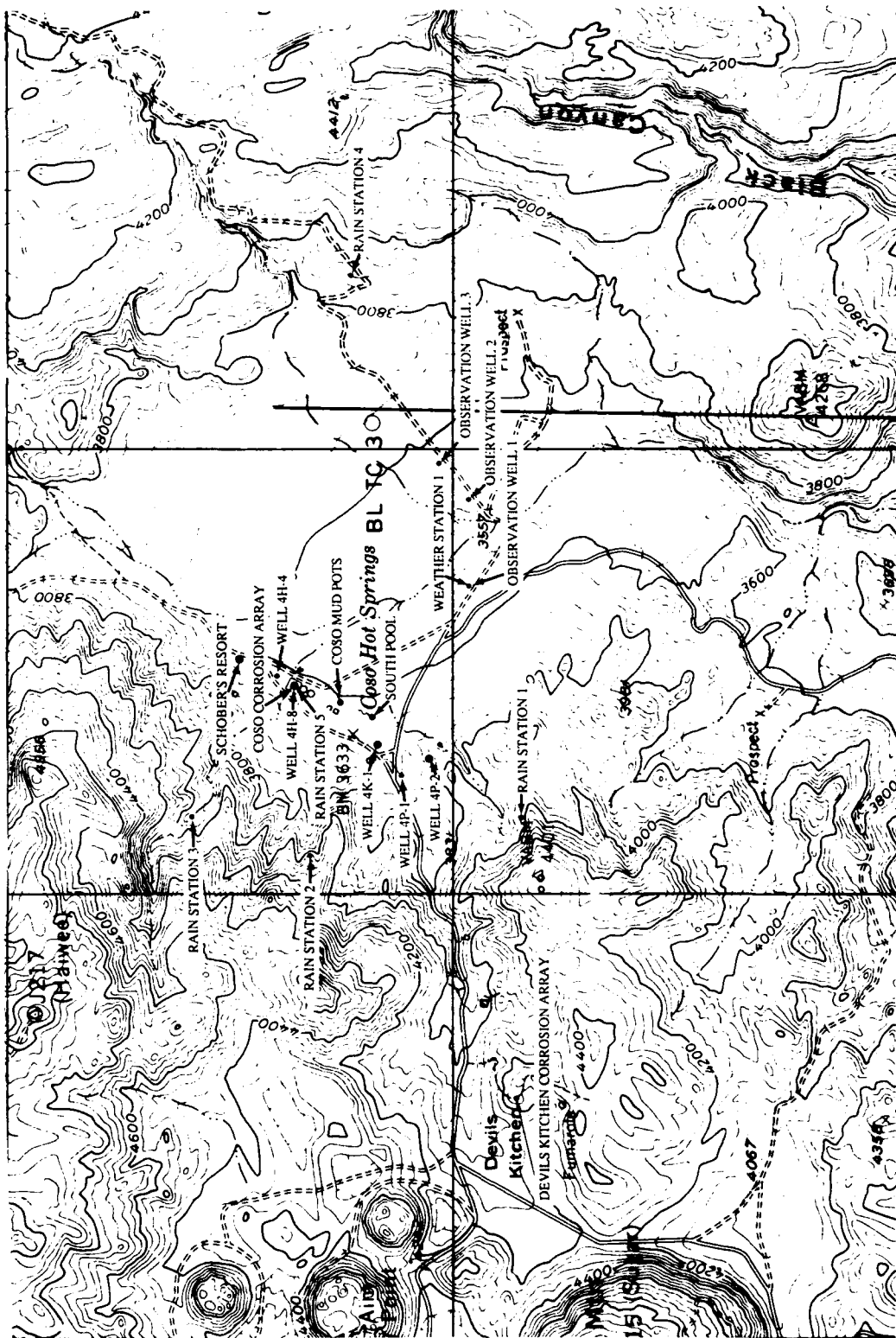


FIGURE 1. Coso Known Geothermal Resource Area Monitoring Sites.

TEMPERATURE AND STEAM FLOW MONITORING

Steam flow and temperature are measured at four sites in the Coso Hot Springs area. One monitoring site is located within Devils Kitchen and the other stations are located along the Coso Hot Springs-Airport Lake Fault. Temperature data are used as collected, while the steam flow data are converted from graph units to steam flow in pounds per hour. The conversion factors for the steam data are calculated using the standard orifice equation for gas flow. The Barton pressure differential meters and temperature recorders were calibrated during the months of April and May 1991. Periodic manometer readings were taken to ensure the data recorded were accurate.

DEVILS KITCHEN

Steam flow at Devils Kitchen is monitored using a 25-inch water column Barton pressure differential flow meter and recorder. The conversion factor based on the orifice size is 40.23. Daily high and low steam flow data collected at Devils Kitchen for the period of this report are presented in Appendix A, Table A-1. The mean flow and standard deviations for high and low daily steam flow are presented in Table 2. These data are shown graphically in Figure 2.

TABLE 2. Devils Kitchen Statistical Steam Flow.

Date	High daily flow, lb/h		Low daily flow, lb/h	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	361.3	4.8	356.4	7.3

Steam flow has remained consistent since incorporation of the Barton block manifold in January 1989. Except for an unexplainable 2% increase in steam flow, beginning in June 1991, the only other deviations were short term and the result of equipment error. Erroneous data recording has been minimized through frequent equipment checks and annual calibrations as well as monthly manometer reading to verify data accuracy.

WELL 4P-2

Daily high and low steam flow and steam temperature data for Well 4P-2 are presented in Appendixes A and B, Tables A-2 and B-1. These data are shown graphically in Figures 3 and 4. Yearly mean data and standard deviations are presented for high and low daily steam flow and steam temperature in Tables 3 and 4.

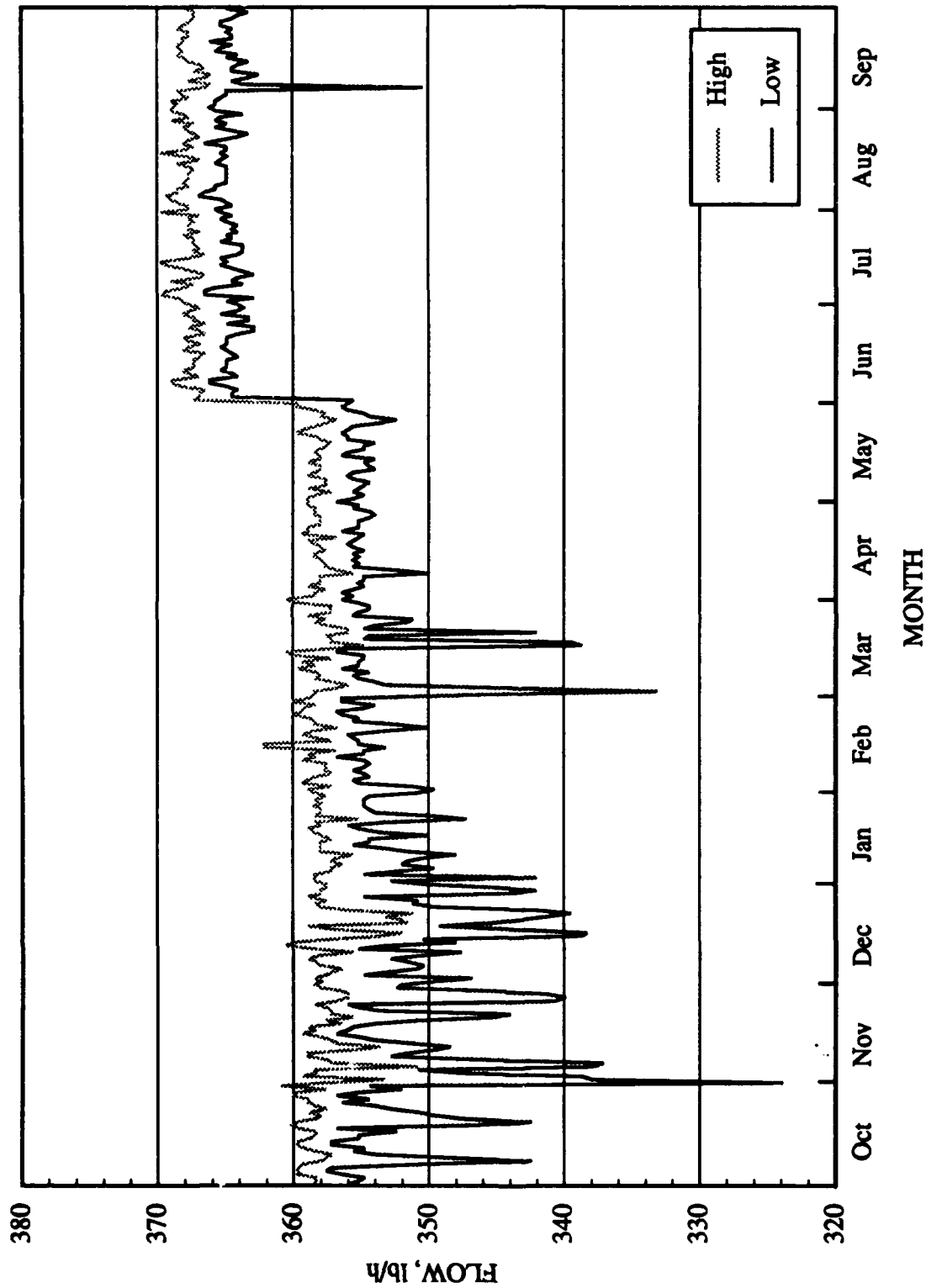


FIGURE 2. Devils Kitchen Steam Flow, 1 October 1990 Through 30 September 1991.

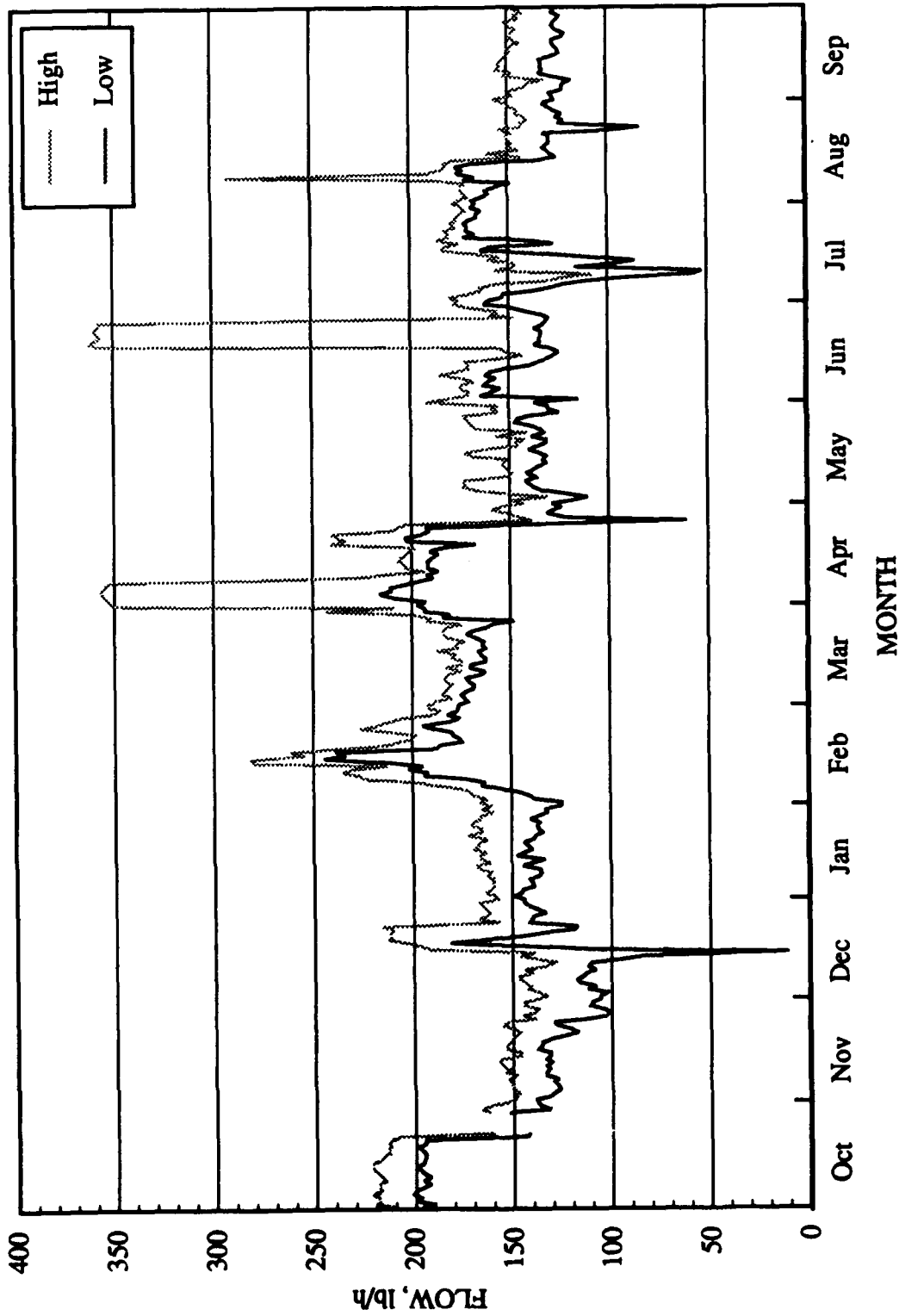


FIGURE 3. Well 4P-2 Steam Flow, 1 October 1990 Through 30 September 1991.

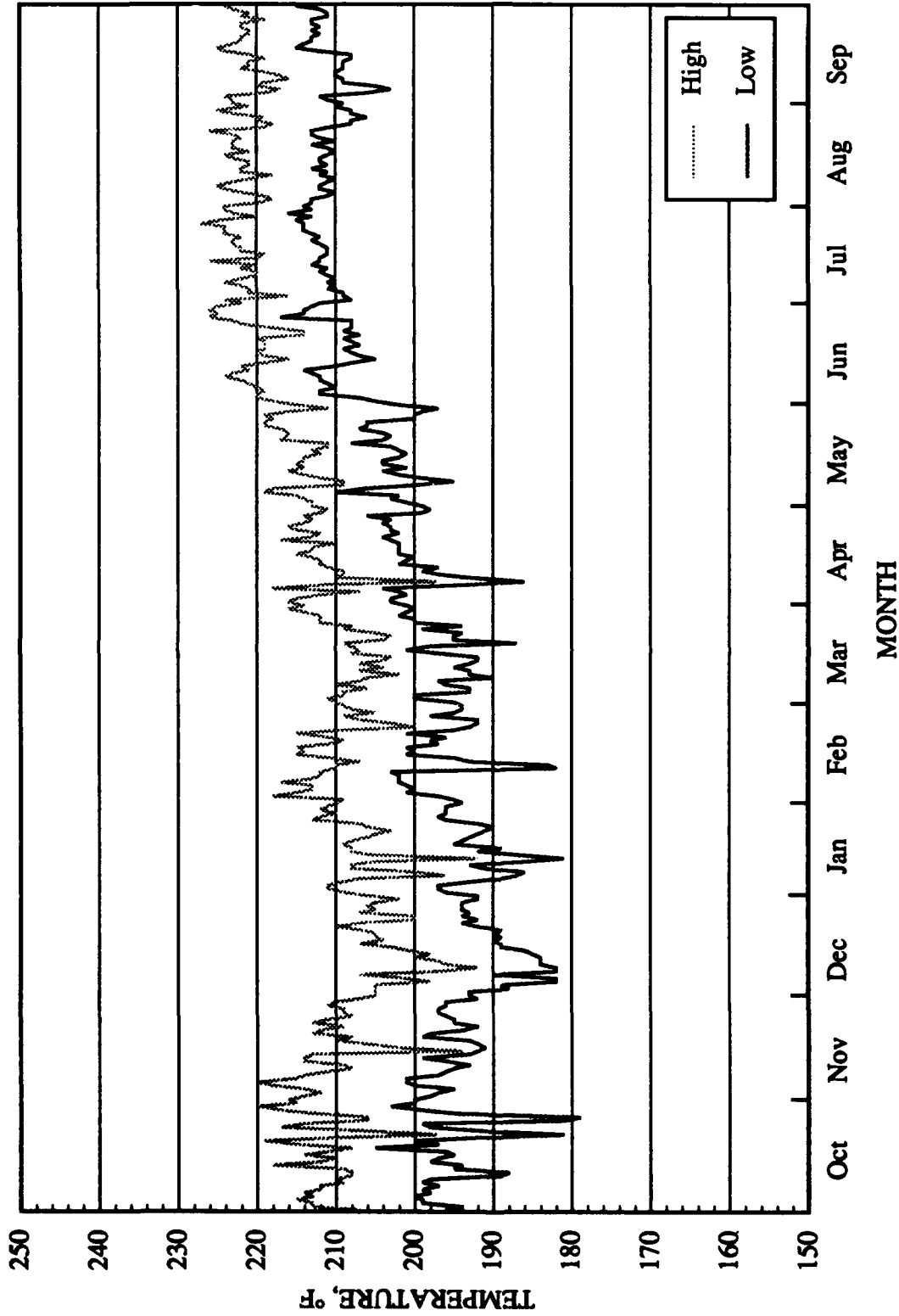


FIGURE 4. Well 4P-2 Steam Temperature, 1 October 1990 Through 30 September 1991.

NWC TP 7194

TABLE 3. Well 4P-2 Statistical Steam Flow.

Date	High daily flow, lb/h		Low daily flow, lb/h	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	180.1	48.1	147.1	32.9

TABLE 4. Well 4P-2 Statistical Steam Temperature.

Date	High daily flow, °F		Low daily flow, °F	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	213.6	7.1	200.9	8.6

As was stated in NWC TP 7138 (Reference 1), Well 4P-2 began geysering in May 1990. The effect continued with only slight changes until the middle of August 1991, when the geysering ceased. The geysering was normally made up of steam heavily laden with mud, however on 3 June 1991, the initial burst of steam was observed to be followed by geysering water, then a subsequent return to steam. It is suspected that the geyser effect is caused by a blockage of the steam path underground by fluid (condensate mixed with clay). The fluid flows or drains into the steam fracture stopping steam flow to the well bore. Steam pressure builds beneath the fracture until it overcomes the weight of the fluid. The steam then races to the surface, clearing the fractures and ejecting some of the fluids out the well bore. The remaining fluid drains back into the fractures, initiating a repeat of the cycle.

Manometer readings have been attempted on numerous occasions, but the results have been so low that any real accuracy is not feasible. This site is monitored several times a week to note sporadic activity, and to record any changes. Present plans are to discontinue the data recording, but to continue temperature logging and collecting water samples to stay abreast of changes as they occur.

WELL 4H-4

The daily steam flow for Well 4H-4 is presented in Appendix A, Table A-3. These data are shown graphically in Figure 5. The mean flow data and standard deviations for the high and low daily steam flow at this site are presented in Table 5.

TABLE 5. Well 4H-4 Statistical Steam Flow.

Date	High daily flow, lb/h		Low daily flow, lb/h	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	178.5	16.4	170.3	18.5

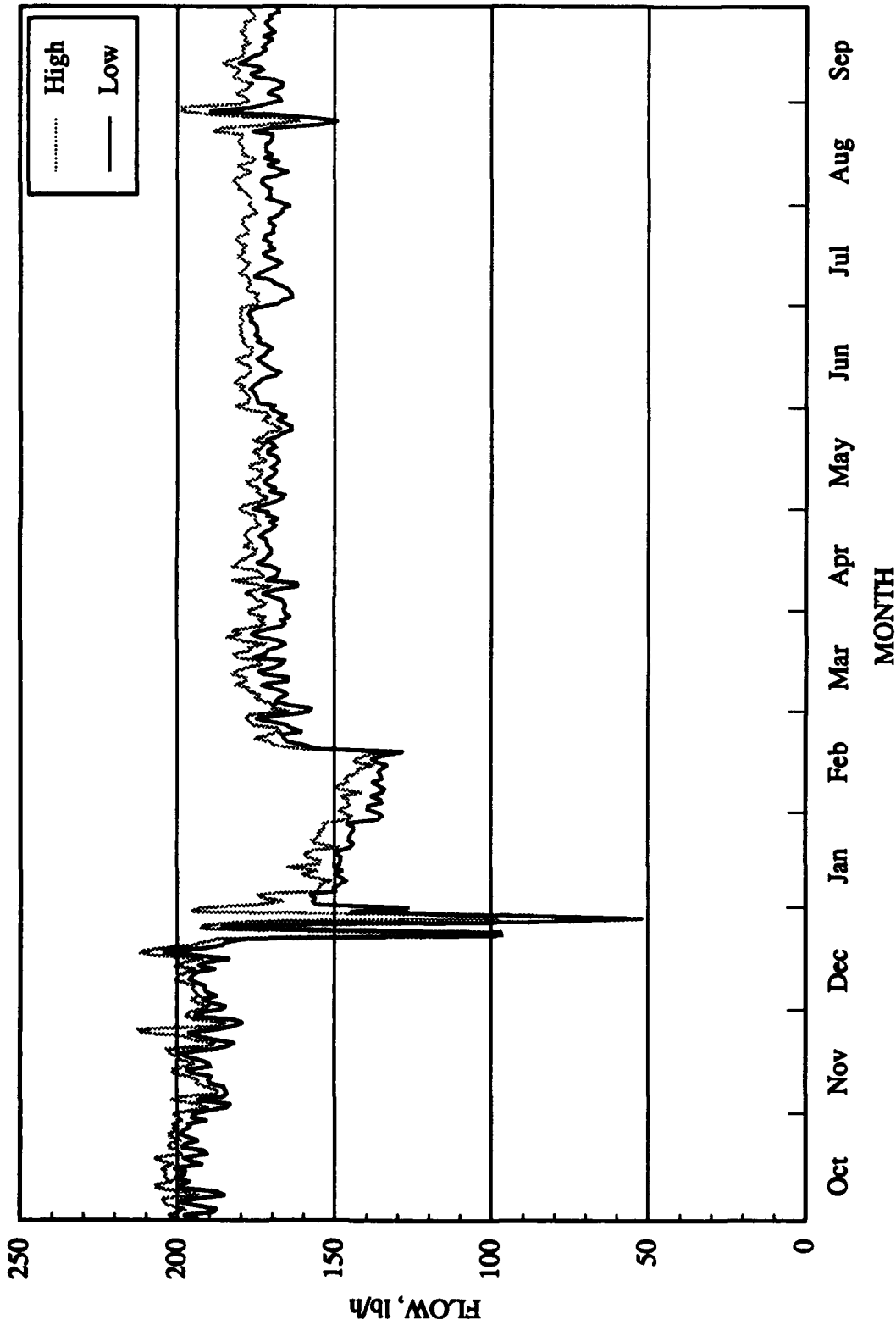


FIGURE 5. Well 4H-4 Steam Flow, 1 October 1990 Through 30 September 1991.

NWC TP 7194

Well 4H-4 was dug and cased with a string of 55-gallon barrels to a depth of approximately 20 feet before the Navy acquired the land. The well was rehabilitated and capped with an 8-inch "stove pipe" by Navy personnel specifically for use as a monitoring site. This site is equipped with a 25-inch water column meter as explained in Reference 1.

On 23 December 1990 the condensate pots froze and split open. The pots were removed from the system and new plumbing was installed from the well to the Barton block manifold, giving more consistent and stable data.

WELLS 4A-2 AND 4A-3

The daily steam flow and steam temperature data for Wells 4A-2 and 4A-3 at Schober's Resort are presented in Appendixes A and B, Tables A-4 and B-2. The mean data and standard deviations for the highs and lows are presented for the daily steam flow (Table 6) and steam temperature (Table 7). The daily steam flow and steam temperature data are shown graphically in Figures 6 and 7. The daily ambient temperature is no longer recorded here. A hygrothermograph located at Observation Well No. 1, east of the resort area away from blowing steam is now in use, giving more accurate readings for the Coso Basin area. Further explanation is found in the Weather Station No. 1 discussion on page 51.

TABLE 6. Wells 4A-2 and 4A-3 Statistical Steam Flow.

Date	High daily flow, lb/h		Low daily flow, lb/h	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	1312.3	22.0	1283.8	25.7

TABLE 7. Wells 4A-2 and 4A-3 Statistical Steam Temperature.

Date	High daily flow, °F		Low daily flow, °F	
	Mean	Standard deviation	Mean	Standard deviation
1 Oct 90 - 30 Sep 91	225.7	2.2	221.3	2.1

This site remains relatively reliable despite an estimated 10% loss of the steam flow being recorded. This loss was caused by heavy rainfall in the immediate area that eroded the soil from around the well casings, allowing steam to vent up along the well casings and in adjacent ground. Some sharp increases in steam flow were caused by the filling in of an area that was blown out by the escaping steam. The spreading of hot ground area has not increased in size or number of steam vents since the blowouts around the well casings have grown to their present size. The area is closely monitored to record any activity that may occur.

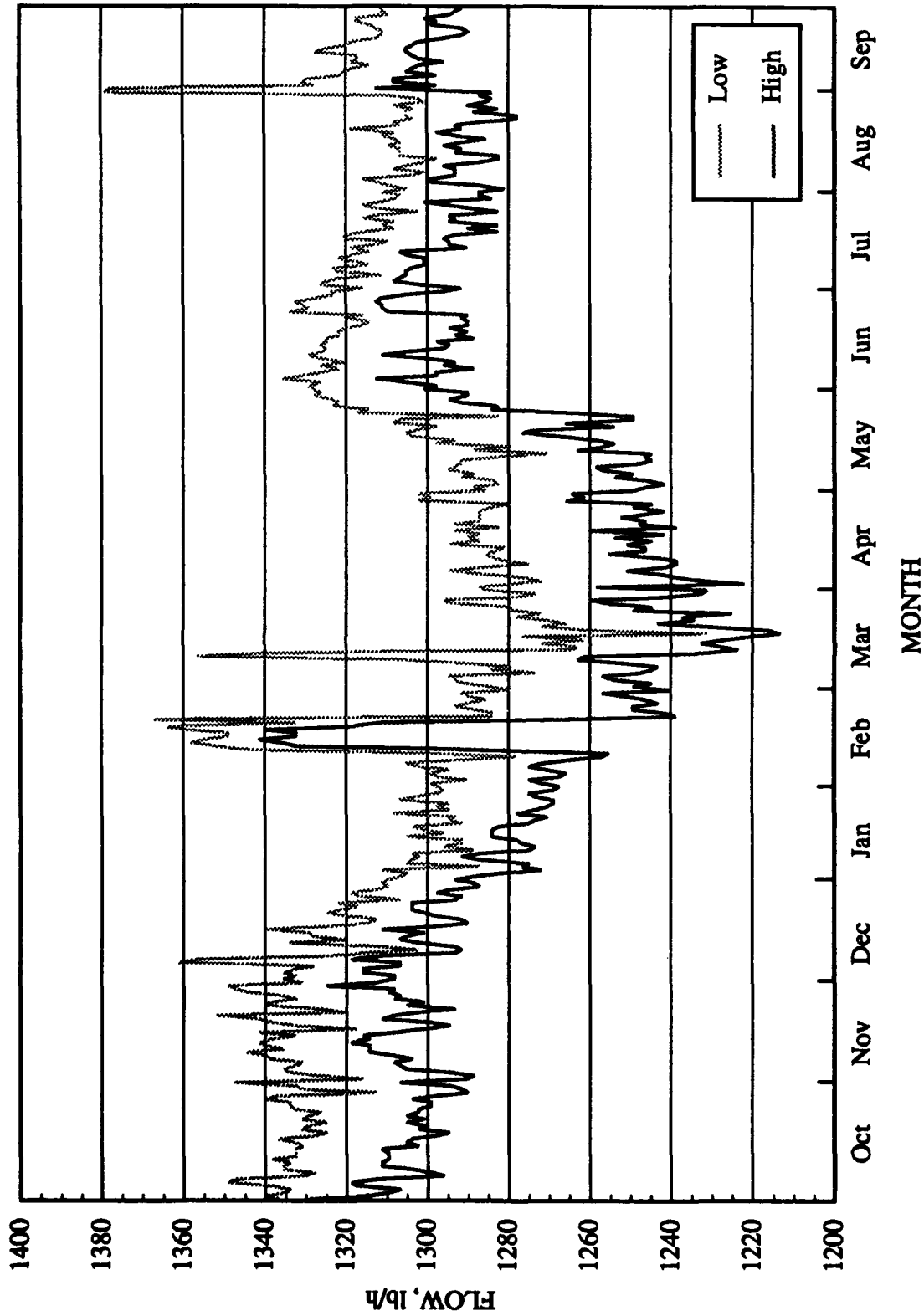


FIGURE 6. Wells 4A-2 and 4A-3 Steam Flow, 1 October 1990 Through 30 September 1991.

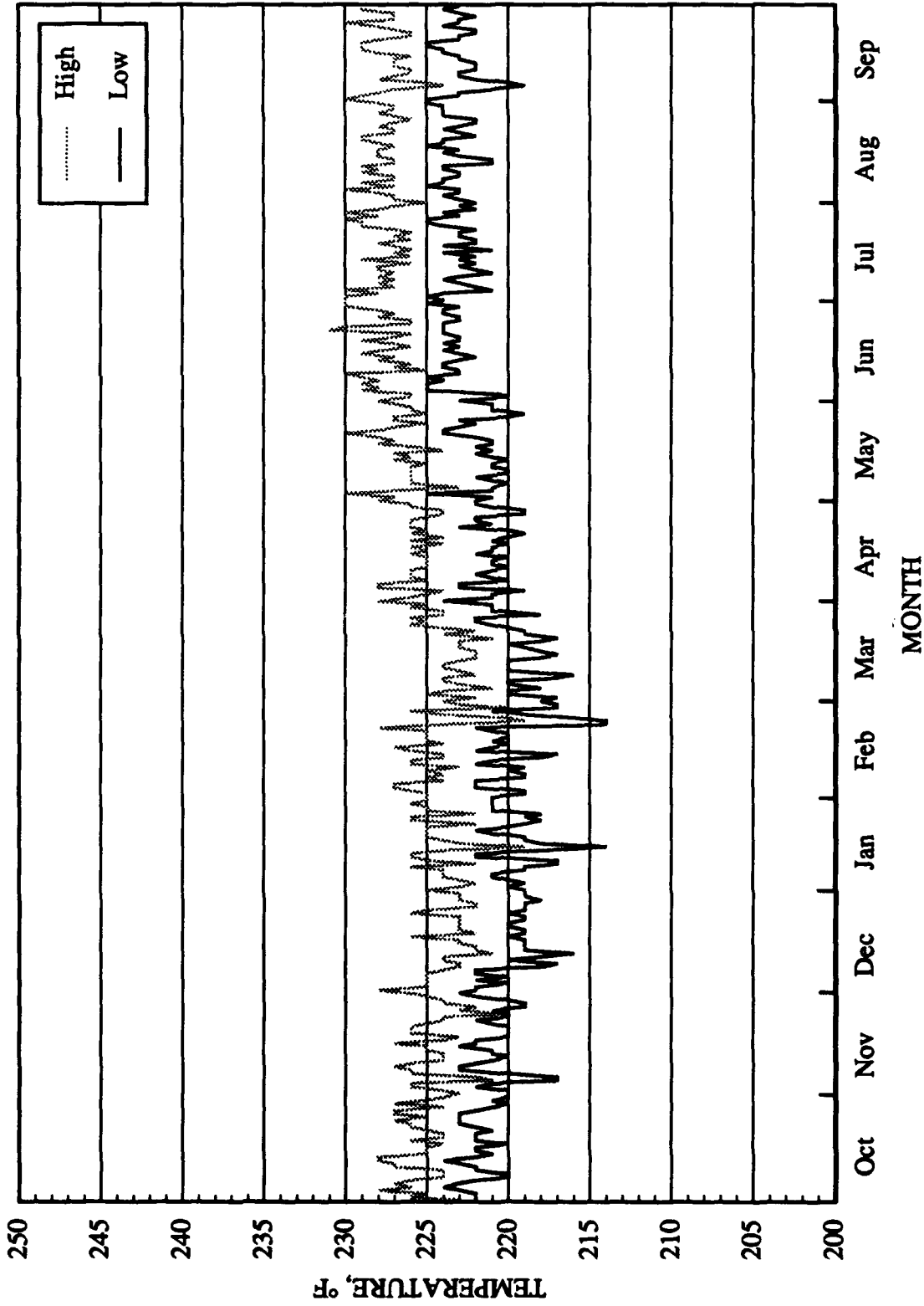


FIGURE 7. Wells 4A-2 and 4A-3 Steam Temperature, 1 October 1990 Through 30 September 1991.

COSO HOT SPRINGS MUDFIELD PHOTOGRAPHIC INVESTIGATION

A weekly photographic investigation was initiated in January 1978 to document the fluctuation in fluid levels in several of the more prominent mud pots in the Coso KGRA. This project has continued into the steam-production and power-generation stages of the geothermal development.

Steam and weather conditions often combine to partially obscure the Coso Resort area, limiting the usefulness of traditional photography locations. Nine new photographic sites were chosen in February. These sites are distributed in and around the resort area so that at least four photographs can be taken each week that will clearly show the physical status of the thermal activity. Figures 8 through 19 illustrate seasonal variations at several Coso Resort sites. The sites are listed in Table 8 and are shown in Figure 20.

TABLE 8. Photographic Sites and Views.

Site number	Primary view from each site
1	South Pool looking north
2	Overall Resort Mudfield, including Crater 4KC-8 looking west and northwest
3	Overall Resort Mudfield looking west, northwest, and south
4	Mudfield looking west
5	Mudfield looking southeast
6	Mudfield looking south with Resort
7	North side of Mudfield looking south and southwest
8	Crater 4KC-8 looking south, southeast and east
9	Crater 4KC-8 looking northeast



(a) Site 1 looking north.



(b) Mudfield area looking southeast.

FIGURE 8. Coso Hot Springs, 9 October 1990.



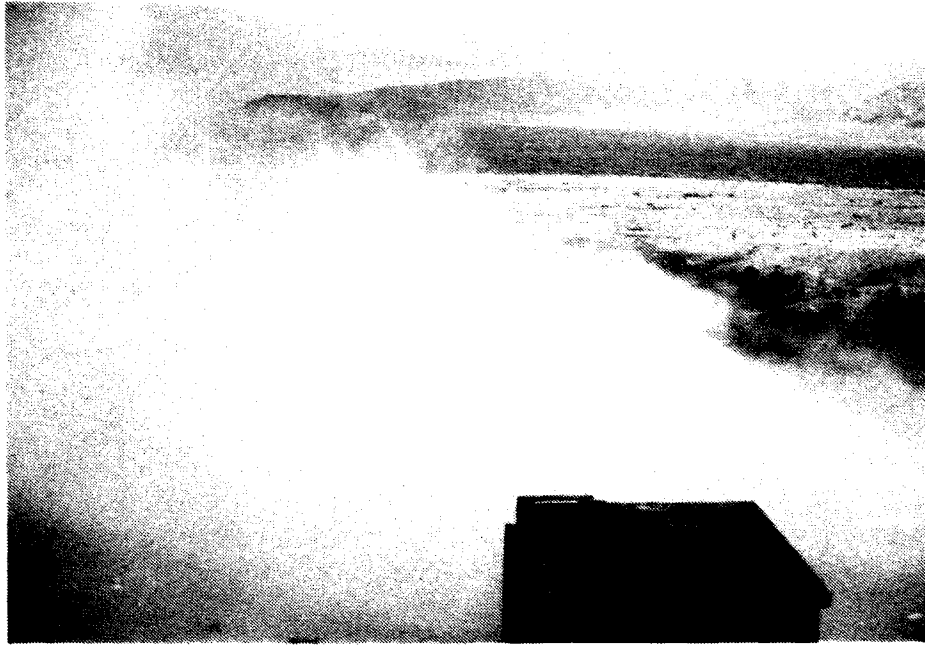
(a) Site 1 looking north.



(b) Mudfield area looking southeast.

FIGURE 9. Coso Hot Springs, 6 November 1990.

NWC TP 7194

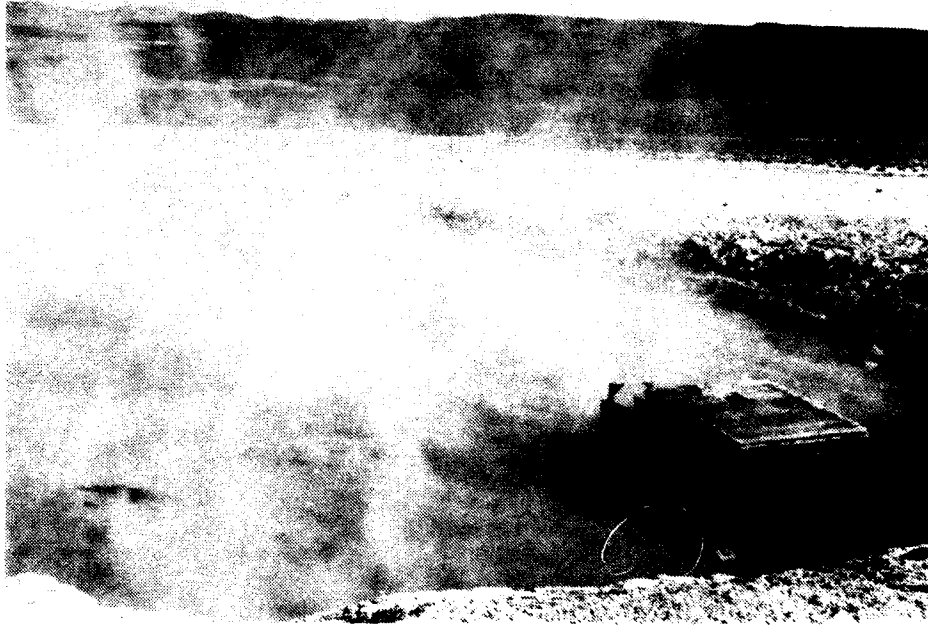


(a) Site 1 looking north.

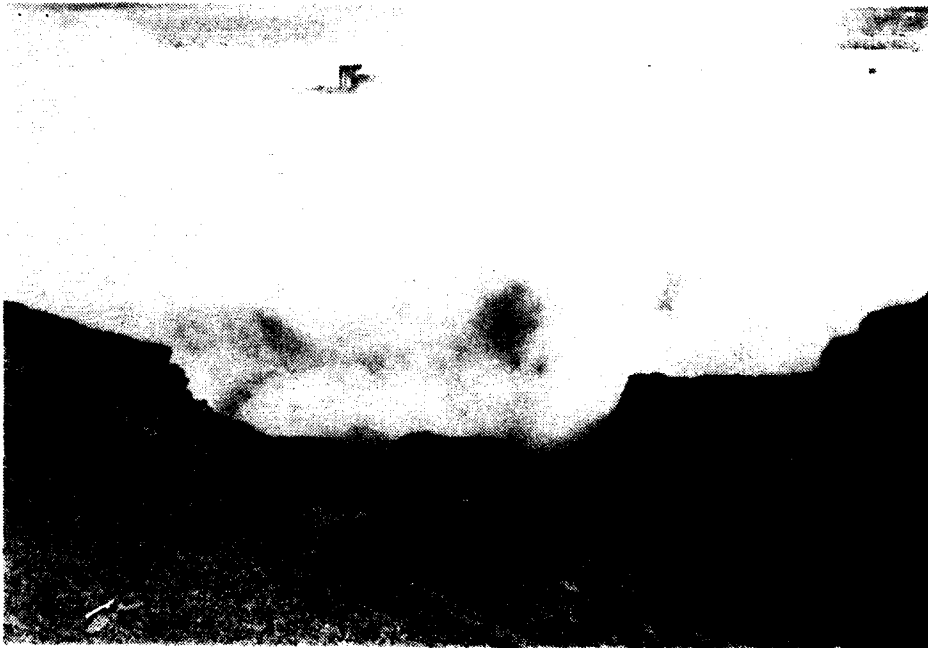


(b) Mudfield area looking south.

FIGURE 10. Coso Hot Springs, 13 December 1990.



(a) Site 1 looking north.



(b) Mudfield area looking east.

FIGURE 11. Coso Hot Springs, 2 January 1991.



(a) Site 1 looking north.

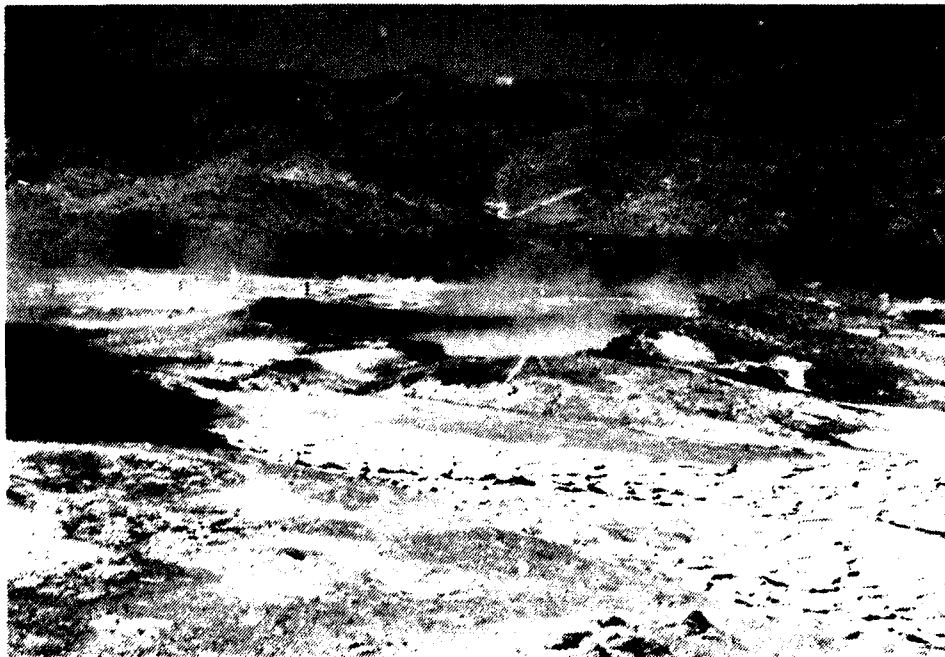


(b) Site 3 looking northwest.

FIGURE 12. Coso Hot Springs, 25 February 1991



(c) Site 8 looking south.



(d) Site 2 looking west.

FIGURE 12. Contd.

NWC TP 7194

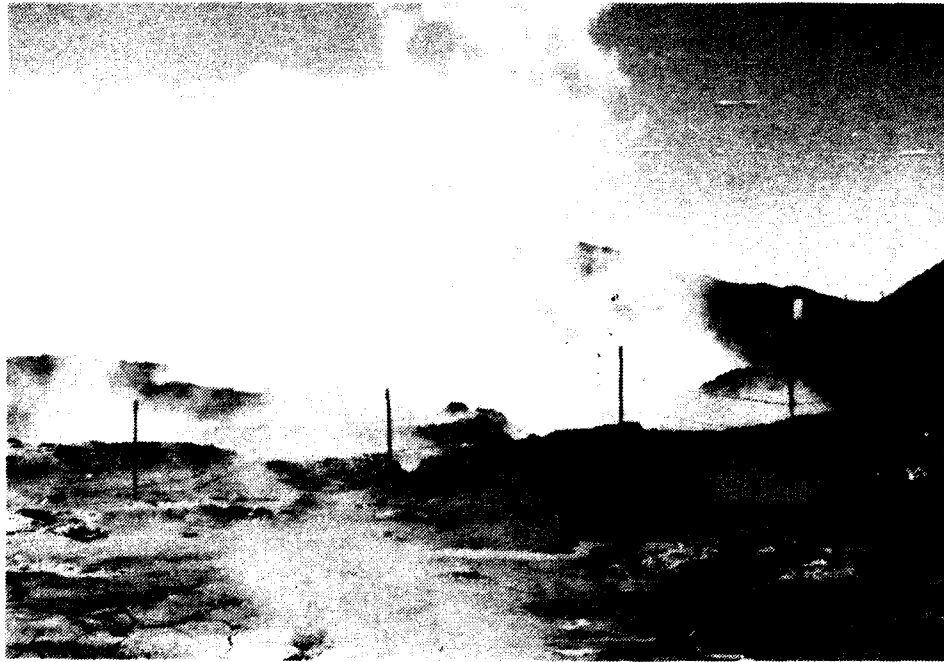


(a) Site 1 looking north.



(b) Site 7 looking south.

FIGURE 13. Coso Hot Springs, 11 March 1991.

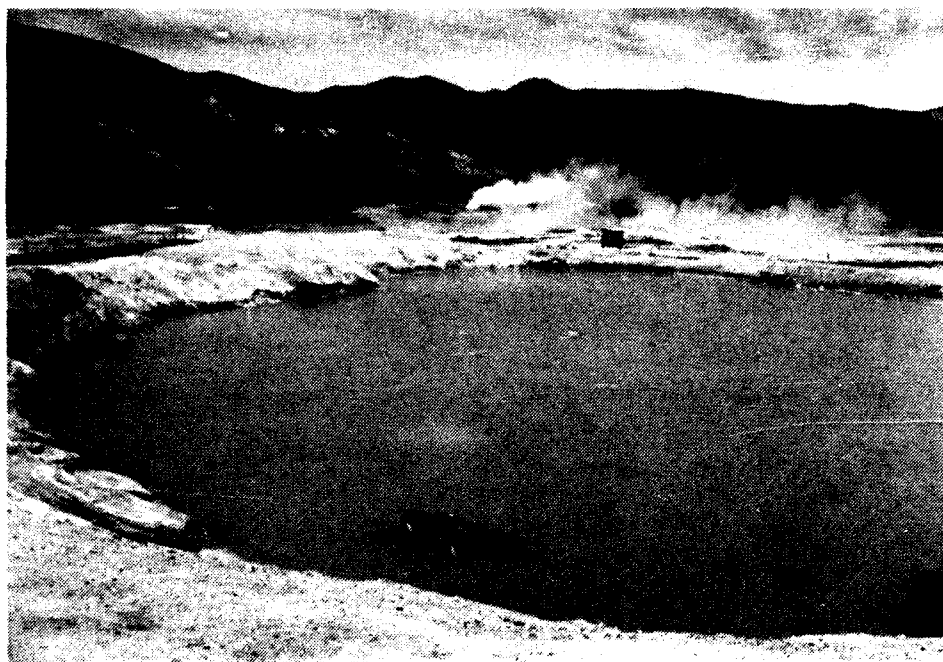


(c) Site 7 looking southwest.



(d) Site 8 looking south.

FIGURE 13. Contd.



(a) Site 1 looking north.



(b) Site 6 looking east.

FIGURE 14. Coso Hot Springs, 25 April 1991.

NWC TP 7194

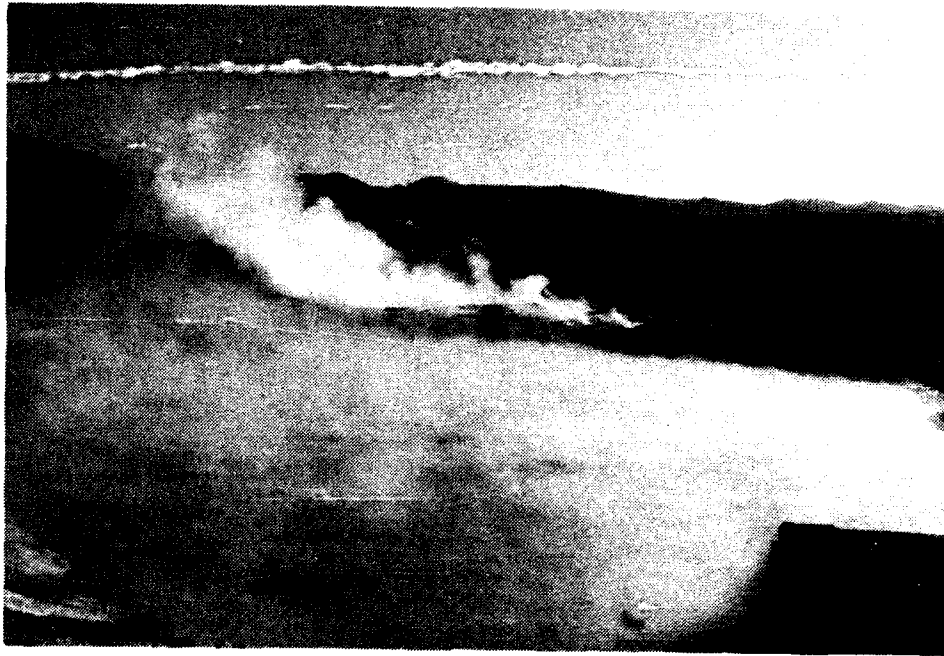


(c) Site 2 looking northwest.

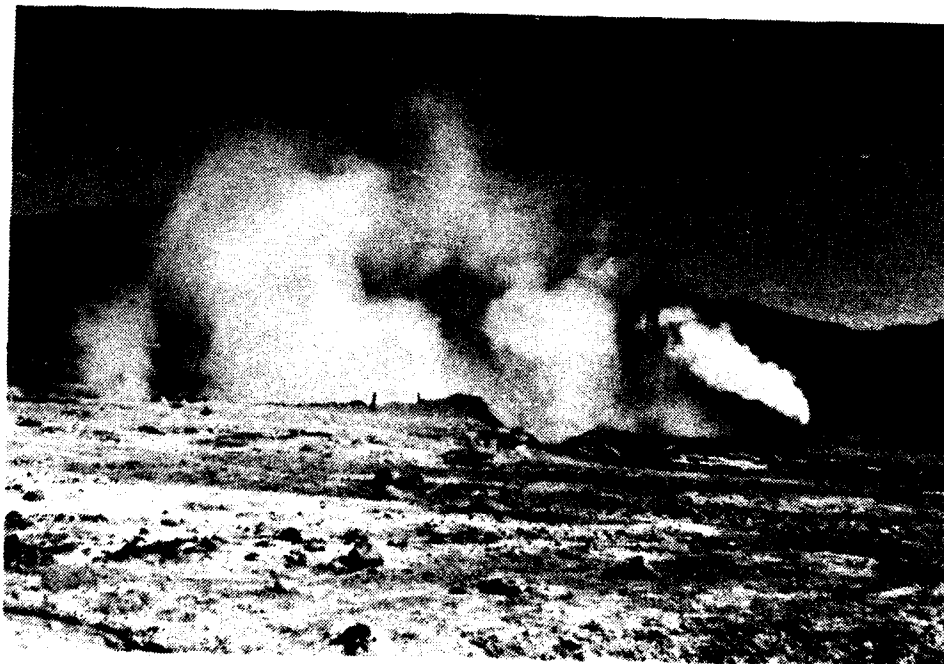


(d) Site 8 looking south.

FIGURE 14. Contd.



(a) Site 1 looking north.



(b) Site 3 looking northwest.

FIGURE 15. Coso Hot Springs, 20 May 1991.

NWC TP 7194



(c) Site 6 looking south.



(d) Site 3 looking south.

FIGURE 15. Contd.

NWC TP 7194

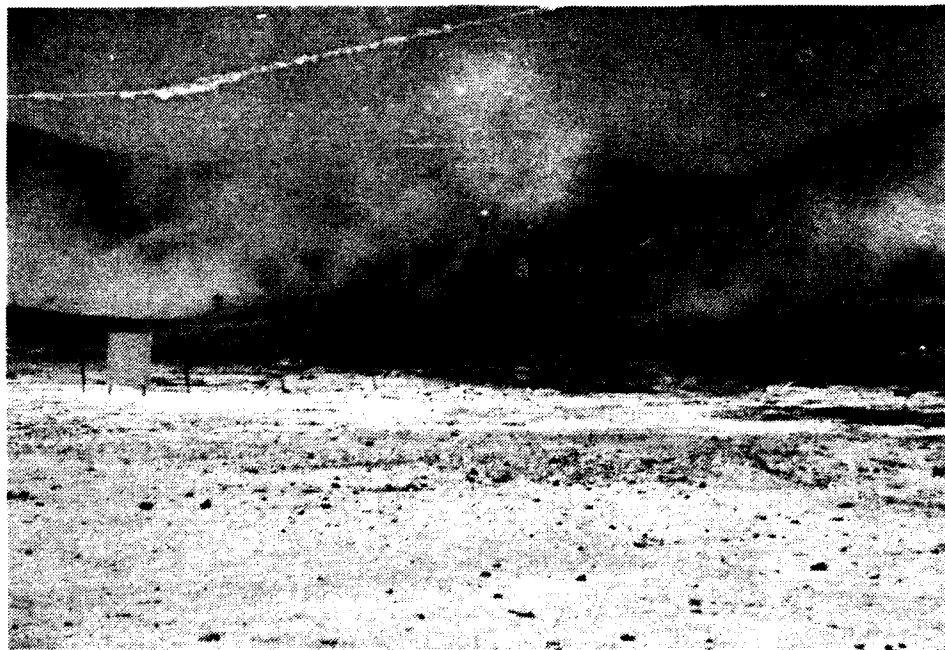


(a) Site 1 looking north.



(c) Site 7 looking south.

FIGURE 16. Coso Hot Springs, 24 June 1991.



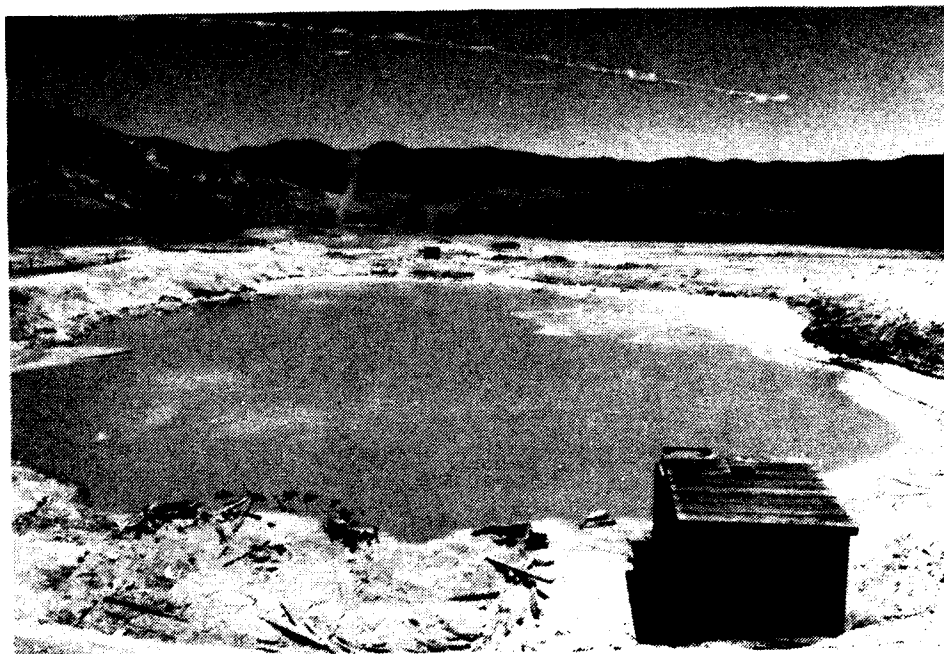
(c) Site 4 looking west.



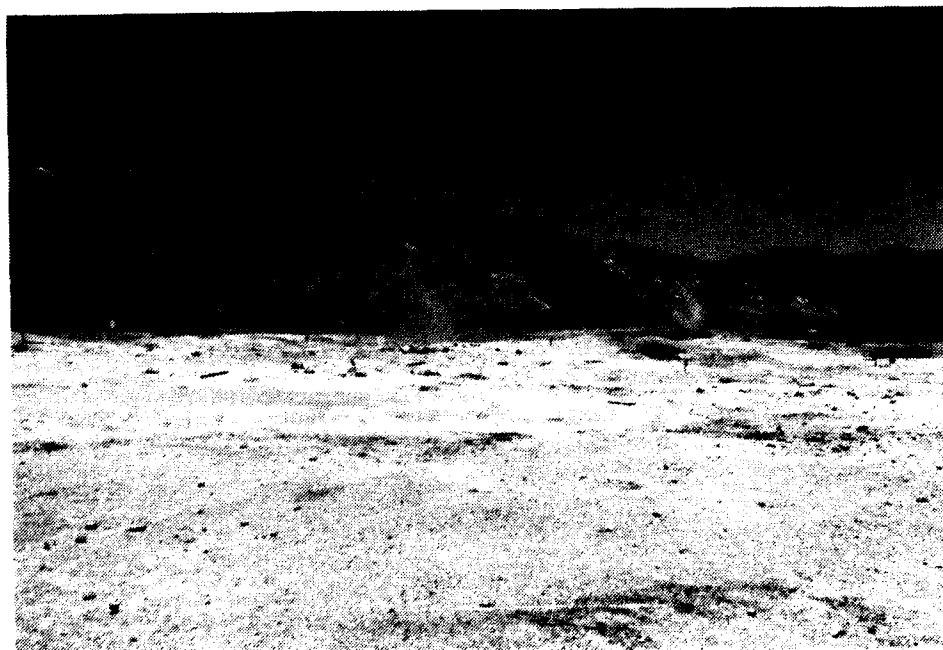
(d) Site 9 looking northeast.

FIGURE 16. Contd.

NWC TP 7194



(a) Site 1 looking north.



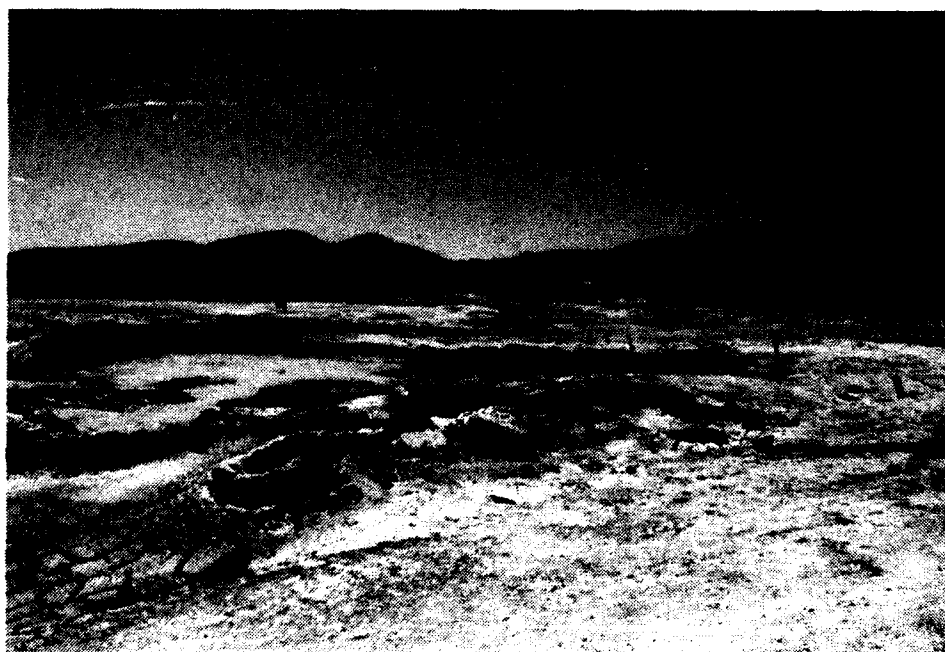
(b) Site 3 looking northwest.

FIGURE 17. Coso Hot Springs, 1 July 1991.

NWC TP 7194



(c) Site 8 looking east.



(d) Site 8 looking south.

FIGURE 17. Contd.



(a) Site 1 looking north.



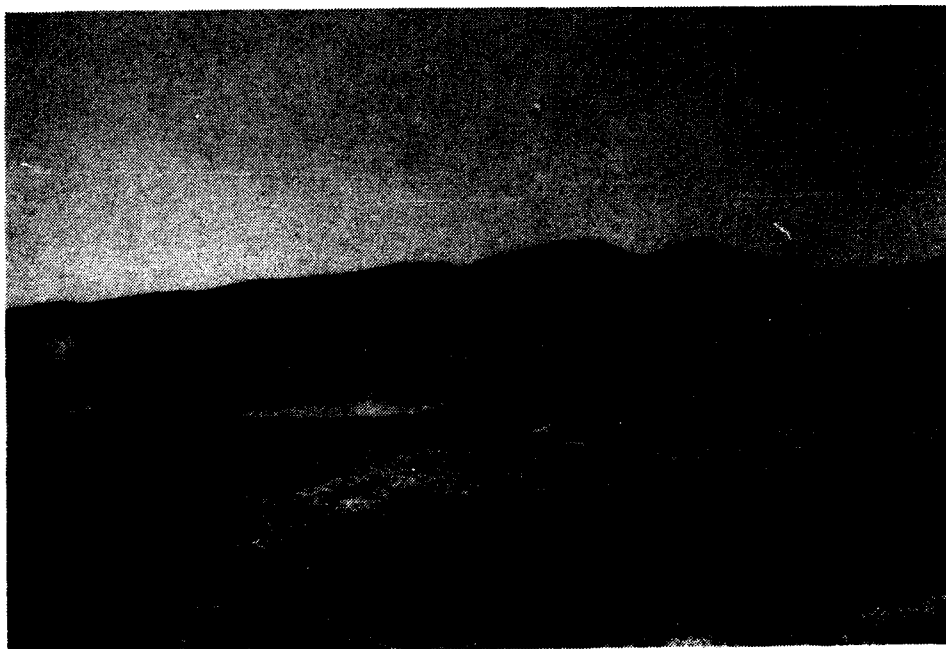
(b) Site 3 looking northwest.

FIGURE 18. Coso Hot Springs, 6 August 1991.

NWC TP 7194



(c) Site 2 looking west.



(d) Site 8 looking south.

FIGURE 18. Contd.



(a) Site 1 looking north.



(b) Site 4 looking northwest.

FIGURE 19. Coso Hot Springs, 3 September 1991.

NWC TP 7194



(c) Site 8 looking southeast.



(d) Site 8 looking south.

FIGURE 19. Contd.

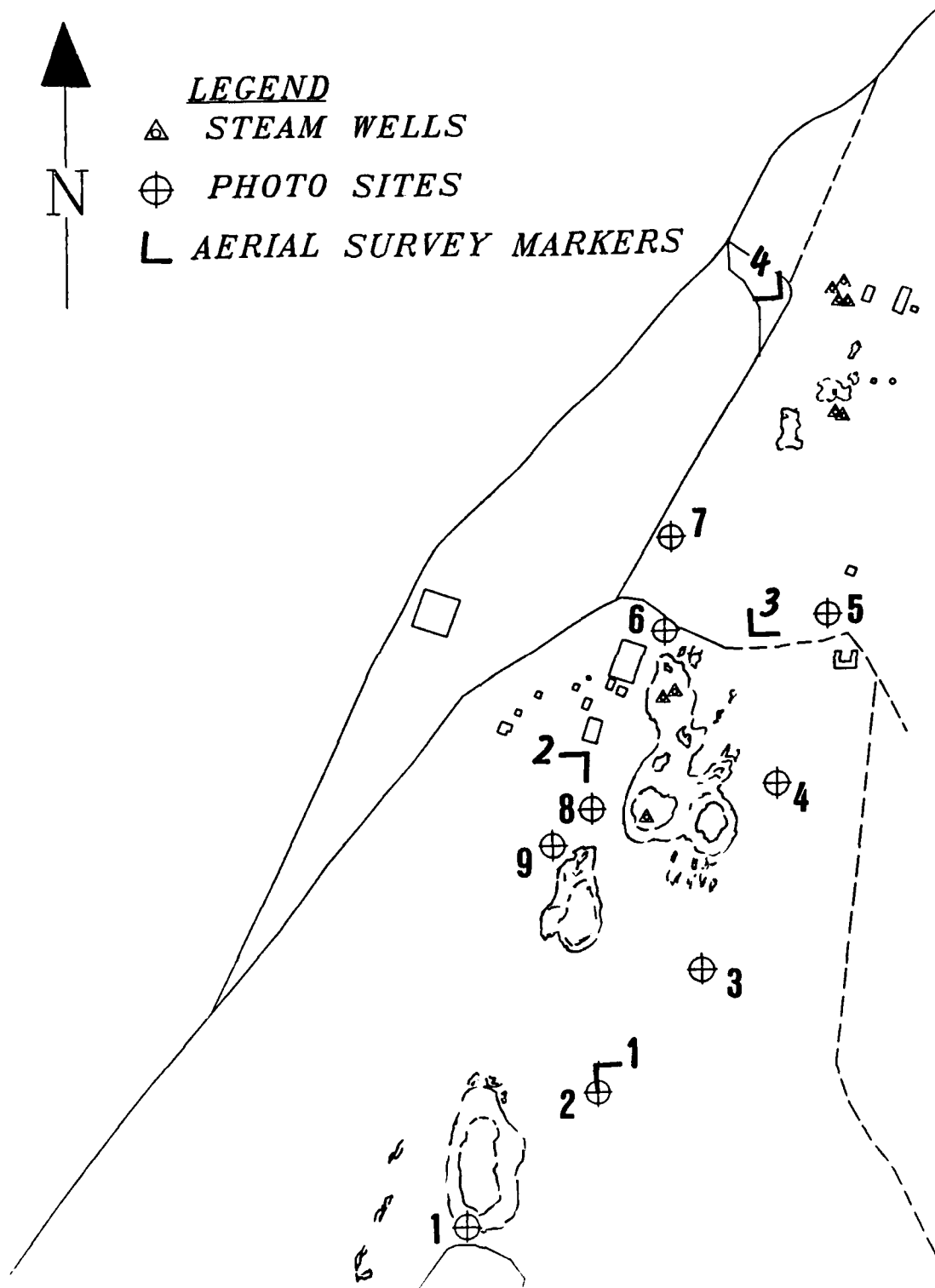


FIGURE 20. Photographic Locations.

WATER LEVEL MONITORING

OBSERVATION WELLS

Water levels are presently monitored in only six wells. Well 4H-8 is plugged with salt at 184.5 feet so the water level can no longer be taken. A determination has not been made whether or not this well will be reworked. Weekly water levels are taken at Wells 4P-1, Observation Wells (OB) 1, 2, and 3, and occasionally at Wells 4K-1 and 4A-4. These data can be seen in Table 9. Water level measurements at Wells 4P-1, 4K-1, and 4A-4 are taken with a modified Fisher electric water level meter because steam condensate accumulates on the probe of the Solist meter giving a false reading. The Solist meter is used at OB-1, 2 and 3. The water-filled pipe and manometer readings are used as secondary and comparison methods in case of failure of the Solist electric water level tape.

SOUTH POOL

The South Pool water level continued the patterns of seasonal fluctuation (two to four feet) while the average level continues to be above historic levels as it has since 1988 (Figure 21). Weekly water temperature has not been recorded since 4 June 1991 when it became too hazardous to reach the water safely. From 18 June through 30 September 1991, water levels have not been taken in the traditional manner, but have been determined by the comparison of photographs with known elevations and those taken as part of the weekly monitoring program to determine present water elevations. The high water level this period was 3621.0 feet, the low was approximately 3616.8 feet. The average water temperature is still approximately 143° to 145°F except in the areas of the fumarole, where the high temperature is 185°F. Weekly water level and temperature data are presented in Table 10 and Figure 22.

NWC TP 7194

TABLE 9. Observation Well Water Level Data.

Date	Well depth to water, ft					Date	Well depth to water, ft				
	4P-1	OB-1	OB-2	OB-3	4K-1		4P-1	OB-1	OB-2	OB-3	4K-1
02 Oct 90	57.7	151.6	196.2	377.6	54.4	02 Apr 91	56.7	152.5	195.1	377.5	
10 Oct 90	57.6	151.6	196.2	377.6		09 Apr 91	56.5	152.6	195.0	377.4	
16 Oct 90	57.7	151.6	196.2	377.6		16 Apr 91	56.5	152.6	195.0	377.4	53.6
23 Oct 90	57.7	151.7	196.2	377.6	54.3	25 Apr 91	56.5	152.6	195.1	377.4	
30 Oct 90	57.7	151.7	196.2	377.6		30 Apr 91	56.4	152.6	195.1	377.4	
06 Nov 90	57.7	151.8	196.2	377.6		07 May 91	56.4	152.6	195.1	377.4	
13 Nov 90	57.5	151.7	196.2	377.6		14 May 91	56.3	152.6	195.1	377.4	52.8
19 Nov 90	57.5	151.8	196.1	377.7		29 May 91	56.3	152.7	195.0	377.3	
27 Nov 90	57.7	151.9	196.1	377.7	54.3	04 Jun 91	56.4	152.7	195.0	377.3	
04 Dec 90	57.5	151.9	196.0	377.6		11 Jun 91	56.4	152.7	195.0	377.3	51.9
11 Dec 90	57.4	152.0	196.0	377.6		18 Jun 91	55.8	153.2	194.7	377.1	
18 Dec 90	57.3	152.1	196.0	377.6		25 Jun 91	55.8	153.2	194.7	376.7	
26 Dec 90	57.4	152.1	195.9	377.4		02 Jul 91	55.9	153.5	194.7	376.7	
02 Jan 91	57.4	152.2	195.9	377.5	54.7	11 Jul 91	55.9	153.4	194.7	376.7	
08 Jan 91	57.4	152.1	195.8	377.4		15 Jul 91	55.9	153.5	194.7	376.7	51.0
17 Jan 91	57.2	152.1	195.7	377.4		22 Jul 91	55.9	153.5	194.7	376.7	
23 Jan 91	57.2	152.2	195.7	377.4		29 Jul 91	55.8	153.5	194.7	376.7	50.9
29 Jan 91	57.1	152.2	195.5	377.4		05 Aug 91	55.6	154.1	194.5	376.4	
05 Feb 91	57.2	152.3	195.5	377.4	54.4	12 Aug 91	55.6	154.2	194.6	376.4	50.8
11 Feb 91	57.2	152.3	195.4	377.6		19 Aug 91	56.0	154.3	194.6	376.3	
19 Feb 91	57.0	152.3	195.4	377.4		26 Aug 91	56.0	154.4	194.6	376.3	
26 Feb 91	57.0	152.4	195.4	377.4		03 Sep 91	56.1	154.5	194.5	376.1	
05 Mar 91	57.0	152.4	195.3	377.5		10 Sep 91	56.1	154.5	194.6	376.3	50.8
12 Mar 91	56.9	152.5	195.2	377.4		16 Sep 91	56.1	154.8	194.6	376.4	
21 Mar 91	56.7	152.4	195.2	377.5	54.0	24 Sep 91	56.2	154.9	194.4	376.4	50.7
26 Mar 91	56.7	152.5	195.2	377.5		30 Sep 91	56.2	155.0	194.3	376.5	50.6

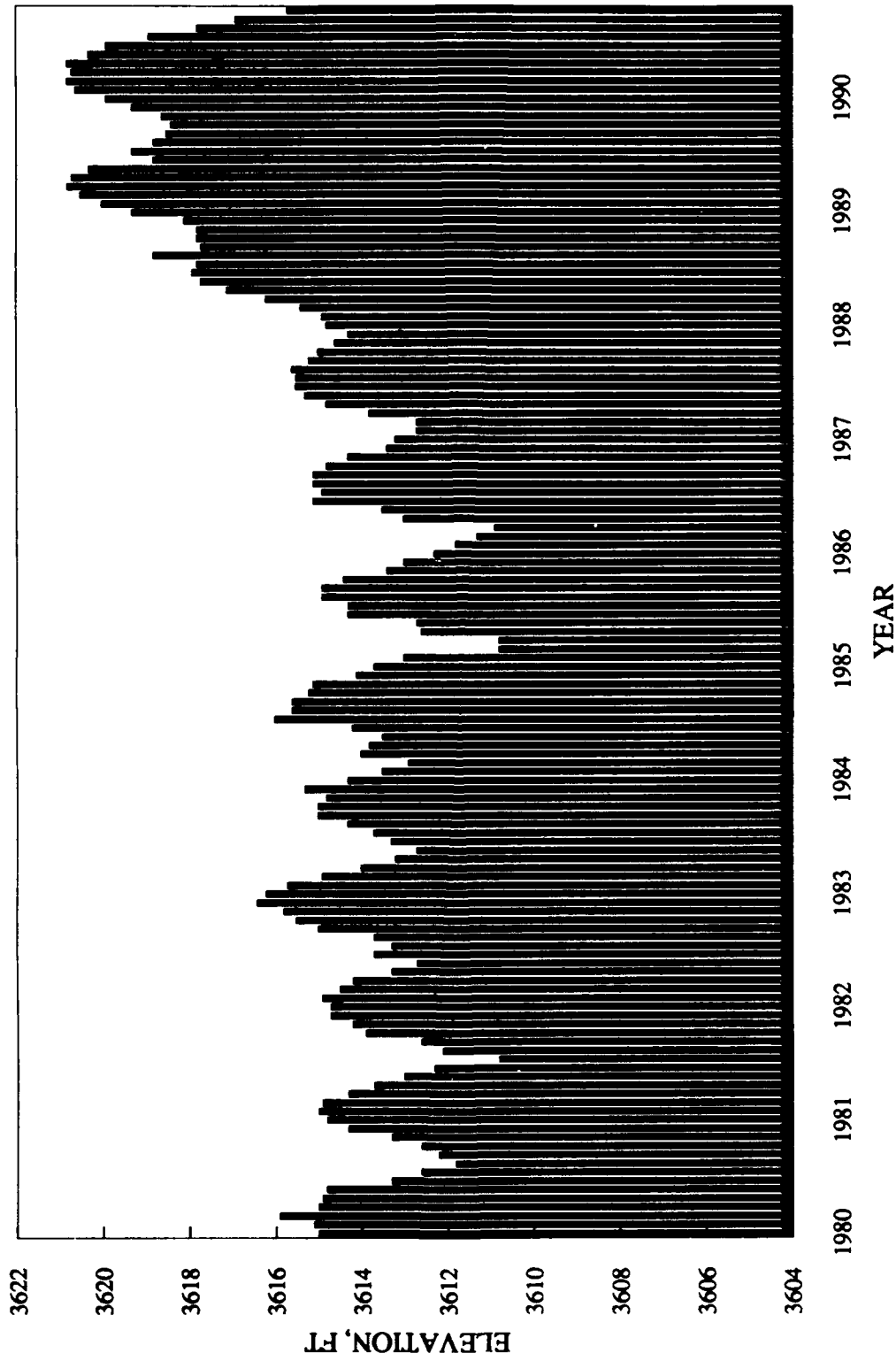


FIGURE 21. South Pool Elevations, January 1980 Through September 1991.

NWC TP 7194

TABLE 10. South Pool Elevation and Temperature Changes.

Date	True elevation, ft	Water temperature, °F	Date	True elevation, ft	Water temperature, °F
2 Oct 90	3618.7	150	2 Apr 91	3620.9	138
10 Oct 90	3618.9	143	9 Apr 91	3620.6	142
16 Oct 90	3619.0	146	16 Apr 91	3620.6	138
23 Oct 90	3619.2	144	25 Apr 91	3620.5	145
30 Oct 90	3619.3	146	30 Apr 91	3620.3	145
6 Nov 90	3619.4	114	7 May 91	3620.2	142
13 Nov 90	3619.6	147	14 May 91	3620.1	142
19 Nov 90	3619.8	147	21 May 91	3620.0	144
27 Nov 90	3619.9	147	29 May 91	3619.9	146
4 Dec 90	3620.0	142	4 Jun 91	3619.9	^a 172
11 Dec 90	3620.0	142	11 Jun 91	3619.6	^b
18 Dec 90	3620.4	142	18 Jun 91	^c 3619.2	^b
26 Dec 90	3620.6	134	25 Jun 91	^c 3618.9	^b
2 Jan 91	3620.7	146	2 Jul 91	^c 3618.7	^b
8 Jan 91	3620.8	142	11 Jul 91	^c 3618.5	^b
17 Jan 91	3620.9	143	15 Jul 91	^c 3618.2	^b
23 Jan 91	3620.8	143	22 Jul 91	^c 3618.1	^b
29 Jan 91	3620.8	145	29 Jul 91	^c 3617.8	^b
5 Feb 91	3620.8	143	5 Aug 91	^c 3617.5	^b
11 Feb 91	3620.7	142	12 Aug 91	^c 3617.3	^b
19 Feb 91	3620.7	143	19 Aug 91	^c 3617.2	^b
26 Feb 91	3620.7	143	26 Aug 91	^c 3616.9	^b
5 Mar 91	3620.7	145	3 Sep 91	^c 3616.8	^b
12 Mar 91	3620.8	143	10 Sep 91	^c 3616.8	^b
21 Mar 91	3621.0	135	16 Sep 91	^c 3616.8	^b
26 Mar 91	3620.8	140	24 Sep 91	^c 3616.8	^b
			30 Sep 91	^c 3615.8	^d 185

^a This temperature was taken from the southwest corner (area near fumarole) using the TD Probe.

^b No temperature was taken during this time.

^c Estimated elevations.

^d This temperature was taken using a thermometer with a 30-inch probe attached to a 16-foot pole.

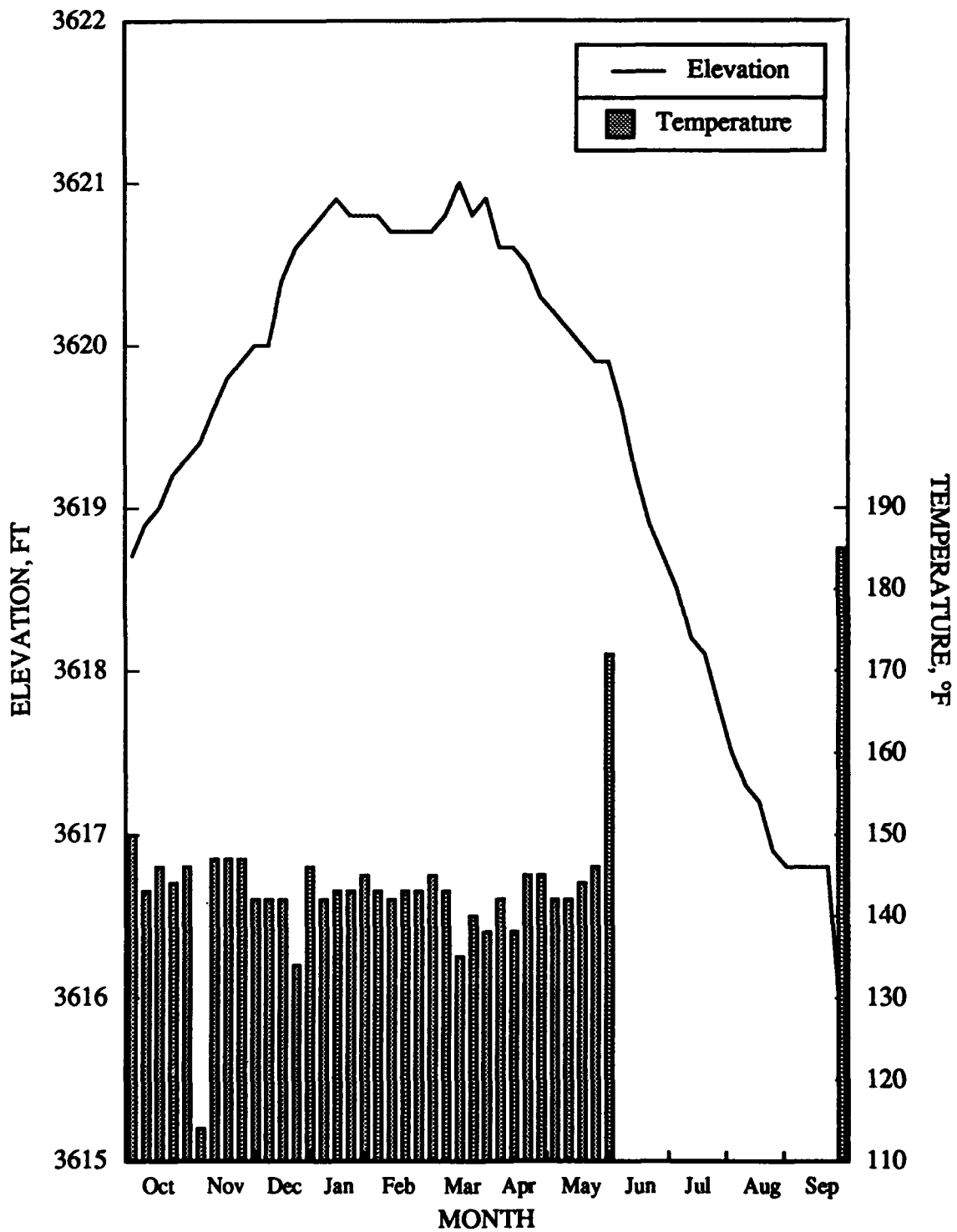


FIGURE 22. South Pool Elevation and Temperature.

RAINFALL AT COSO RESORT AREA AND ROSE VALLEY

Rainfall in the Coso Hot Springs basin is monitored at rain station five sites, as shown in Figure 1. Instrumentation at each site consists of a battery operated long-term strip recorder that is triggered by a tipping bucket. This year there were no interruptions in rainfall data collection caused by equipment failures. Rain stations are checked for proper operation prior to any weather front that may bring rain to the area.

Data from the Coso stations presented in Table 11 show daily and cumulative rainfall. The Rose Valley data (Table 12) is collected at the Los Angeles Department of Water and Power (LADWP) Haiwee Reservoir Plant. As shown in Figures 23 and 24, the Coso area generally receives less annual rainfall than Rose Valley. This significant difference in rainfall between two such closely situated areas is not unusual given the nature of high-desert storms.

Comparative rainfall data for Coso Basin, Rose Valley, and Indian Wells Valley (IWV) can be found in Table 13. The Indian Wells Valley data were gathered at Armitage Field, NWC, and were provided by an NWC meteorologist.

NWC TP 7194

TABLE 11. Rainfall Recorded at Coso Monitoring Stations.

Date	Tipping bucket stations, in.				
	1	2	3	4	5
18 Oct 90	0.10	0.10	0.08	0.06	0.04
01 Nov 90	0.08	0.11	0.10	---	0.07
06 Nov 90	0.05	---	---	---	---
04 Jan 91	0.13	0.08	0.02	---	0.06
27 Feb 91	0.78	0.42	0.72	0.04	0.30
28 Feb 91	0.60	---	0.32	---	0.29
01 Mar 91	0.31	0.02	0.17	---	0.16
03 Mar 91	0.01	---	---	0.08	---
04 Mar 91	0.18	0.12	0.17	---	0.03
19 Mar 91	0.41	0.04	0.55	0.11	0.03
20 Mar 91	0.39	0.02	0.45	---	0.19
21 Mar 91	0.80	0.02	---	---	---
25 Mar 91	0.02	0.01	---	---	---
26 Mar 91	0.02	0.01	0.01	---	0.03
27 Mar 91	0.21	0.02	0.05	---	0.03
03 May 91	0.06	---	---	---	---
08 Jul 91	0.01	---	0.01	---	0.01
05 Sep 91	0.14	---	0.37	0.23	0.47
06 Sep 91	0.22	---	0.18	---	0.04
29 Sep 91	0.04	---	0.03	0.05	0.14
TOTAL	4.56	0.97	3.23	0.57	1.89

NWC TP 7194

TABLE 12. Rose Valley Cumulative Rainfall.

Date	Daily, in.	Snowfall, in.	Cumulative, in.
18 Oct 90	0.02	...	0.02
1 Nov 90	0.02	...	0.04
6 Nov 90	0.03	...	0.07
23 Dec 90	T	...	0.07
4 Jan 91	0.13	...	0.20
27 Feb 91	0.03	...	0.23
28 Feb 91	0.02	...	0.25
1 Mar 91	1.32	...	1.57
3 Mar 91	0.84	...	2.41
4 Mar 91	1.07	...	3.48
8 Jul 91	0.04	...	3.52
5 Sep 91	0.01	...	3.53

T = Trace

NWC TP 7194

TABLE 13. IWV, Rose Valley and Coso Basin
Rainfall Comparison, 1947 Through 1990.

Year	Rainfall, in.		
	IWV	Rose Valley	Coso Basin
1947	2.03	...	...
1948	0.87	...	...
1949	1.30	...	...
1950	1.28	...	...
1951	0.84	...	...
1952	5.88	...	...
1953	0.14	...	...
1954	4.07	...	...
1955	0.56	...	...
1956	1.73	...	...
1957	2.68	...	...
1958	3.70	...	...
1959	2.98	...	...
1960	3.01	...	...
1961	2.46	...	...
1962	2.31	...	...
1963	5.45	8.30	...
1964	0.78	2.49	...
1965	9.15	8.66	...
1966	1.31	6.13	...
1967	4.28	4.32	...
1968	3.16	3.26	...
1969	5.55	8.80	...
1970	3.74	6.45	...
1971	1.47	2.87	...
1972	1.24	1.90	...
1973	2.58	4.56	...
1974	7.48	9.19	...
1975	1.64	2.79	...
1976	3.74	8.50	...
1977	4.67	8.34	...
1978	10.68	12.61	...
1979	5.65	4.97	2.67
1980	6.31	7.75	7.34
1981	4.49	6.34	4.28

NWC TP 7194

TABLE 13. (Contd.).

Year	Rainfall, in.		
	IWV	Rose Valley	Coso Basin
1982	4.73	5.26	4.05
1983	10.56	12.14	10.70
1984	5.95	7.84	3.23
1985	1.29	3.42	1.42
1986	3.68	4.68	4.19
1987	4.43	4.77	5.04
1988	3.76	5.36	1.51
1989	0.94	1.85	1.51
1990	1.78	3.53	2.24

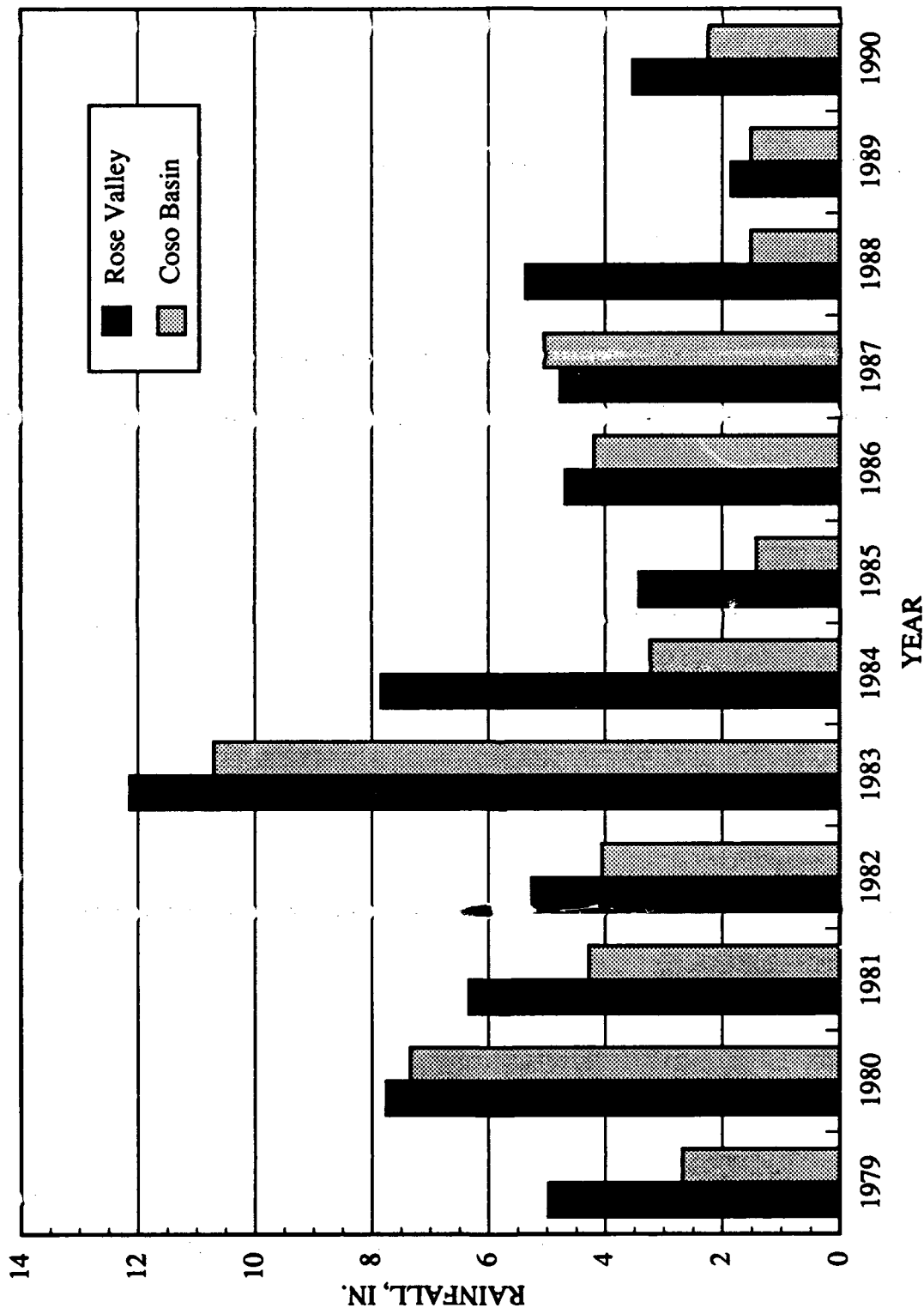


FIGURE 23. Comparison of Total Rainfall at Coso Basin and Rose Valley Sites, by Year.

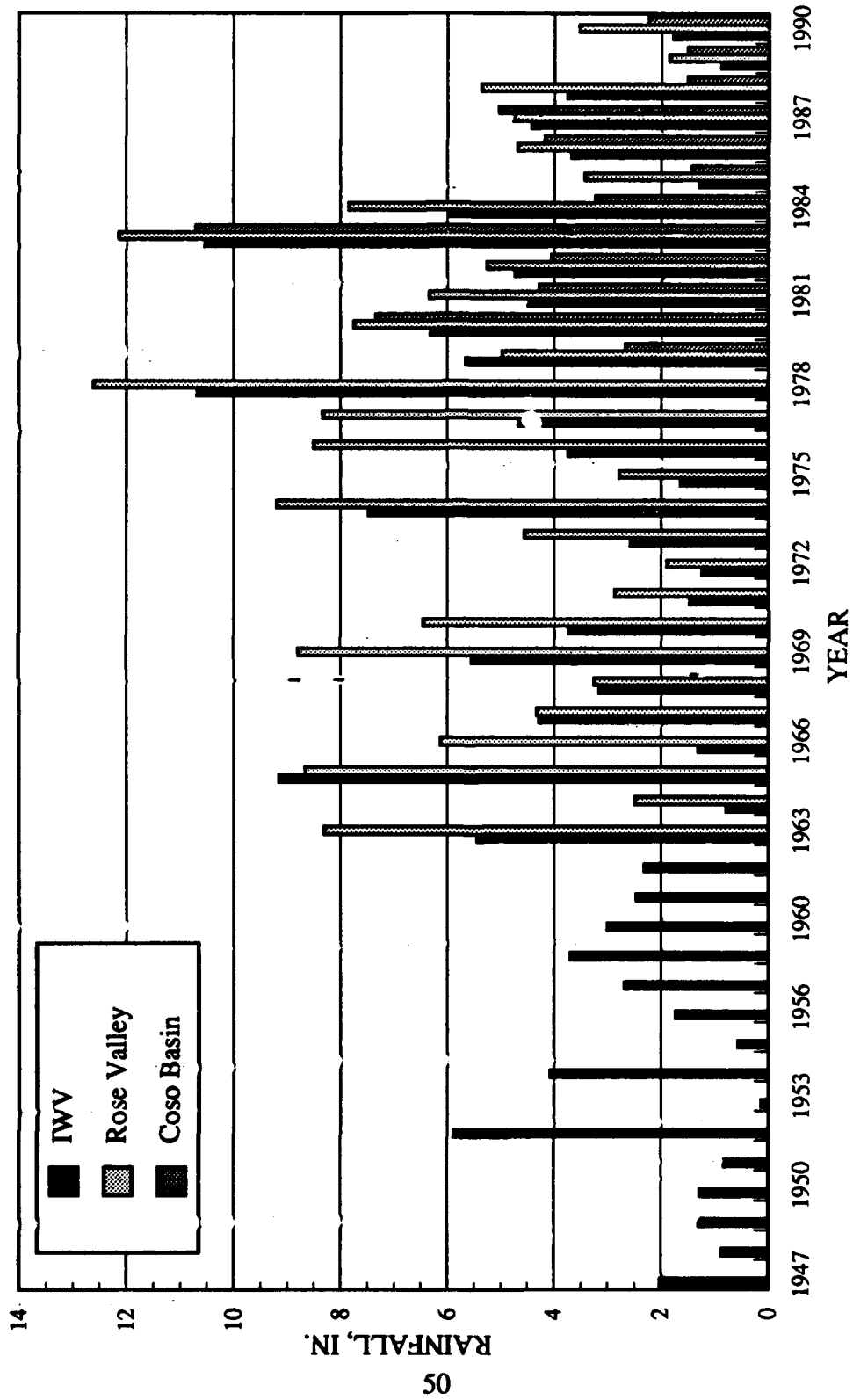


FIGURE 24. Comparison of Total Rainfall at Coso Basin, Rose Valley, and NWC Sites, by Year.

COSO HOT SPRINGS MINI-WEATHER RECORDING STATION

Weather Station No. 1 is a mini-weather station consisting of a micro-baragraph and hygrothermograph. Data collection began on 13 August 1990 from the micro-baragraph and on 22 October 1990 from the hygrothermograph. With the installation of this mini-weather recording station, 24-hour recording of barometric pressure, ambient temperature, and relative humidity with minimal influence from blowing steam is possible. These data are shown graphically in Figures 25, 26, 27, and 28, respectively, and also in Appendix C. Missing data in these graphs are caused by equipment failure or dead batteries. The micro-baragraph was using a government battery, but after consistent failures a commercial brand is now being used with far better results.

As noted in Reference 1, the weather station was located adjacent to Rain Station No. 5 in the old Corrosion Array approximately 100 yards east of Wells 4H-4 and 4H-8. However, because of blowing steam caused by rare winds from the southwest, the station was moved to its present location near Observation Well No. 1 (OB-1), approximately half a mile east of the resort area.

An observation comparison study (equipment calibration) was performed at the weather station utilizing Range Support Branch (Code 6254) personnel and Rotronics equipment. This comparison will be conducted on a semi-annual basis to ensure the accuracy of the weather station equipment and data.

WATER ANALYSIS OF COSO HOT SPRINGS AREA SITES

Water samples were taken from several sites in the Coso Hot Springs area during this reporting period. These samples were analyzed for a suite of geothermal constituents by B.C. Laboratories, Inc., Bakersfield, California. The results are given in Tables 14 through 20.

Wells 4K-1, 4P-1, Observation Well No. 1, Schober's Well 4A-4, and the South Pool are the regular sites used for water analysis. Other sites are also occasionally analyzed for comparison studies of the area's water.

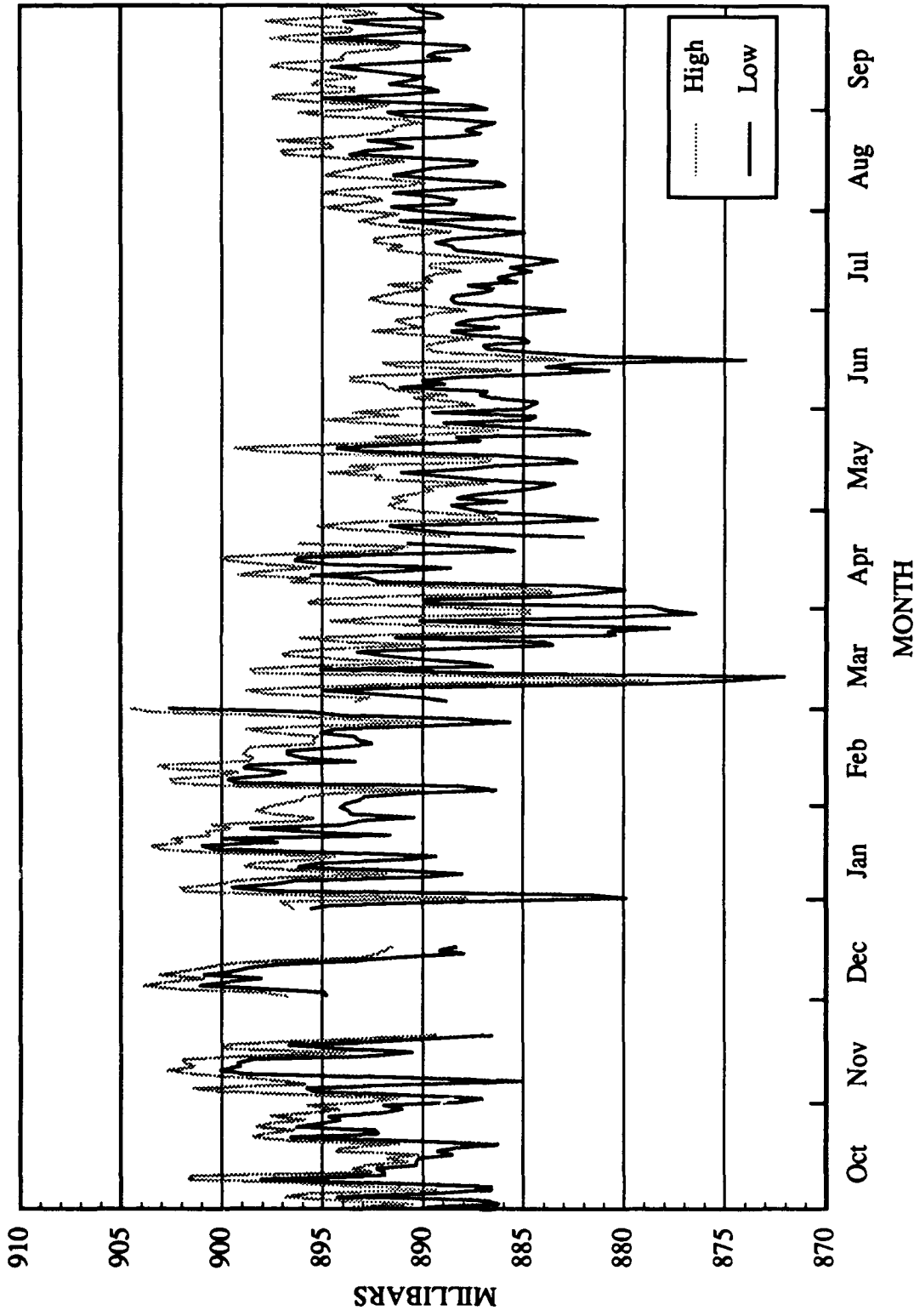


FIGURE 25. Weather Station No. 1 Barometric Pressure.

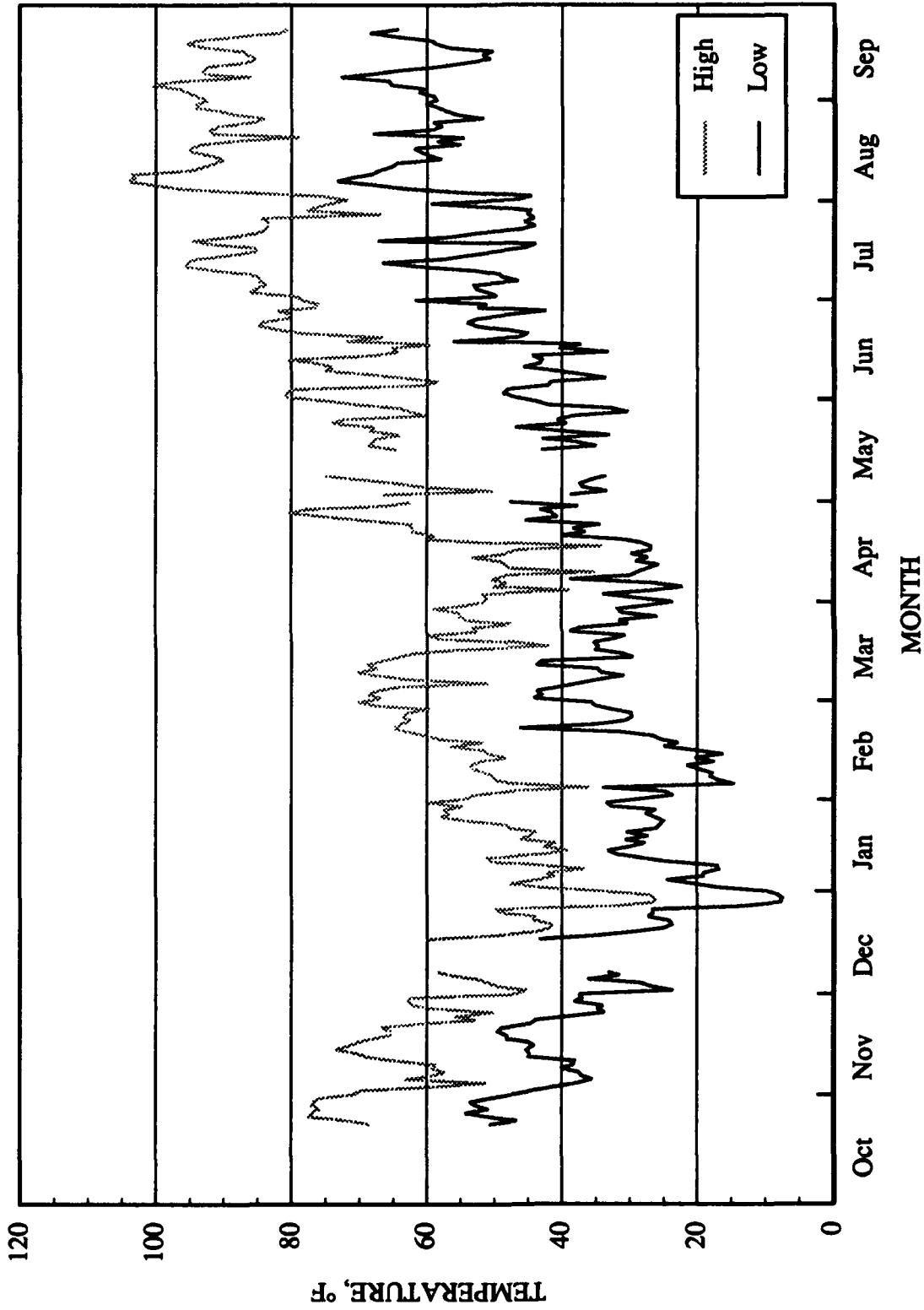


FIGURE 26. Weather Station No. 1 Ambient Temperature.

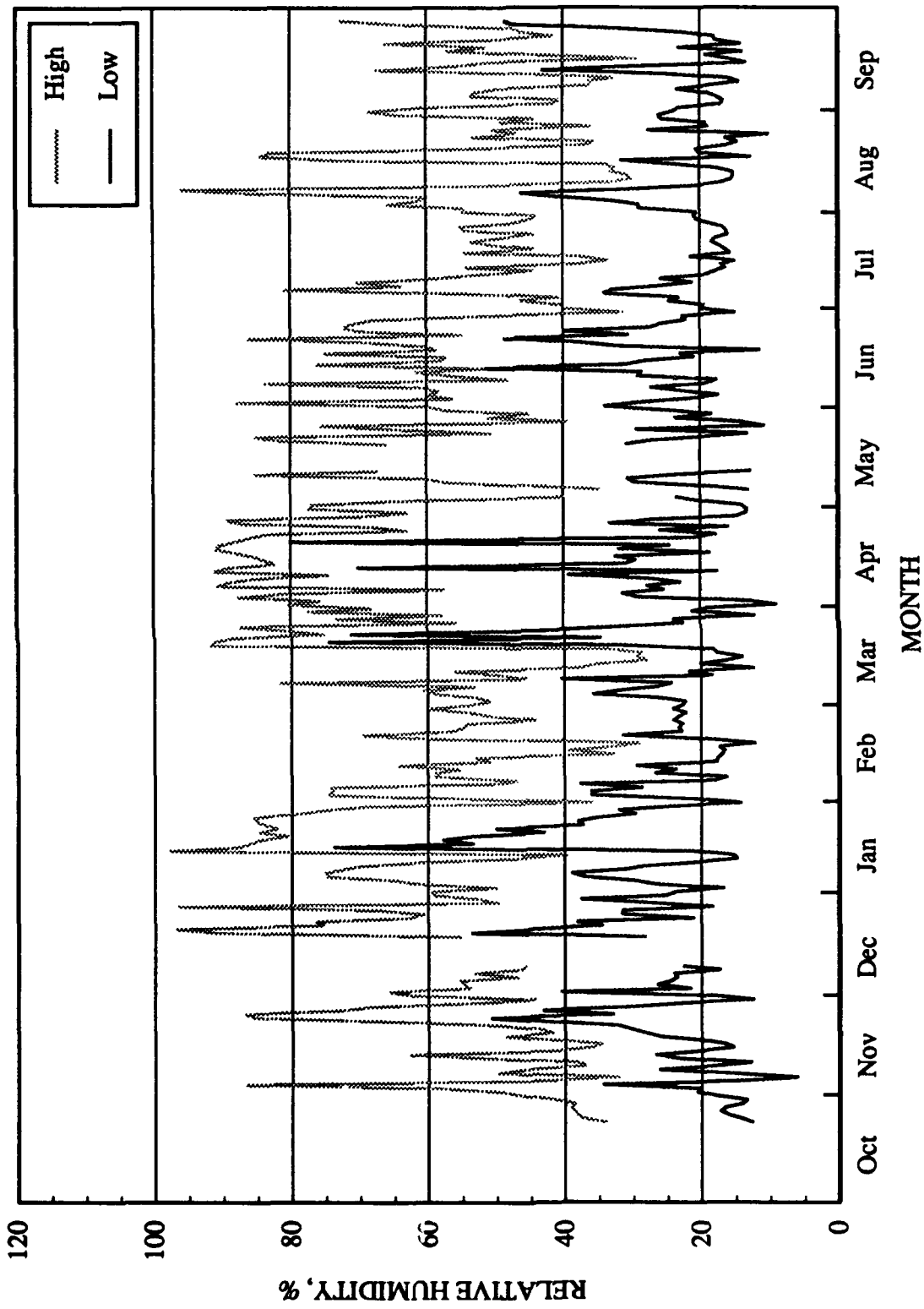


FIGURE 27. Weather Station No. 1 Relative Humidity.

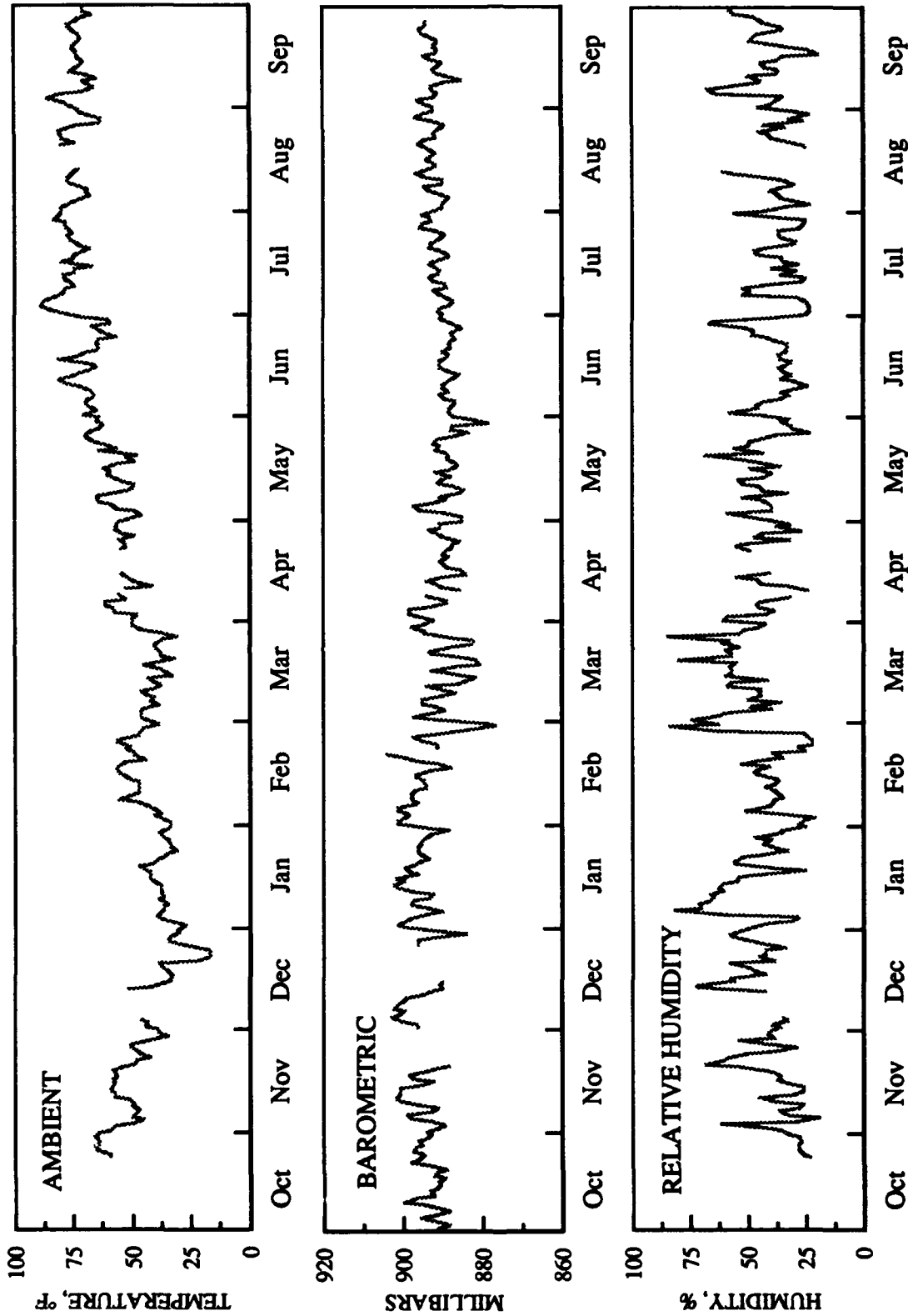


FIGURE 28. Average of Highs and Lows for Weather Station No. 1
(Ambient Temperature, Barometric Pressure, and Relative Humidity).

NWC TP 7194

TABLE 14. Chemical Analysis of Devils Kitchen.

Constituent	Units	19 Mar 91	24 Aug 91
Calcium.....	mg/L	43.0	63.0
Magnesium.....	mg/L	16.0	22.0
Sodium.....	mg/L	31.0	39.0
Potassium.....	mg/L	24.0	36.0
Carbonate.....	mg/L	a	a
Bicarbonate.....	mg/L	a	a
Chloride.....	mg/L	a	a
Sulfate.....	mg/L	1080.0	1276.0
Nitrate as NO ₃	mg/L	0.9	0.9
Nitrate as N.....	mg/L	0.2	0.2
Fluoride.....	mg/L	0.48	0.17
Bromide.....	mg/L	a	a
pH.....	pH	3.0	2.2
Electrical conductivity @ 25 °C.....	µmhos/cm	5300.0	5900.0
Total dissolved solids @ 180 °C.....	µg/L	1870.0	1510.0
Acidity as H ion.....	µg/L	17.2	20.0
Aluminum.....	µg/L	18 390.0	15 900.0
Antimony.....	µg/L	a	a
Arsenic.....	µg/L	10.0	12.0
Boron.....	mg/L	2.8	3.8
Copper.....	µg/L	13.0	a
Lithium.....	µg/L	52.0	85.0
Manganese.....	µg/L	1218.0	1840.0
Mercury.....	µg/L	4.0	a
Selenium.....	µg/L	a	a
Si as SiO ₂	µg/L	291.0	294.0
Strontium.....	mg/L	85.0	112.0
Thallium.....	µg/L	a	a
Zinc.....	µg/L	84.0	73.0
Total Iron.....	µg/L	32 184.0	41 620.0
Ammonia as N.....	mg/L	8.0	17.5
Nitrite Nitrogen.....	mg/L	a	a
Ortho-phosphate.....	mg/L	0.72	0.81

a None detected

NWC TP 7194

TABLE 15. Chemical Analysis of Well OB-1.

Constituent	Units	29 Aug 91
Calcium.....	mg/L	36.0
Magnesium.....	mg/L	3.6
Sodium.....	mg/L	1200.0
Potassium.....	mg/L	104.0
Carbonate.....	mg/L	<i>a</i>
Bicarbonate.....	mg/L	219.0
Chloride.....	mg/L	1920.0
Sulfate.....	mg/L	67.0
Nitrate as NO ₃	mg/L	<i>a</i>
Nitrate as N.....	mg/L	<i>a</i>
Fluoride.....	mg/L	4.2
Bromide.....	mg/L	4.6
pH.....	pH	7.0
Electrical conductivity @ 25 °C.....	µmhos/cm	6600.0
Total dissolved solids @ 180 °C.....	µg/L	3690.0
Acidity as H ion.....	mg/L	<i>a</i>
Aluminum.....	µg/L	<i>a</i>
Antimony.....	µg/L	<i>a</i>
Arsenic.....	µg/L	405.0
Boron.....	mg/L	39.7
Copper.....	µg/L	<i>a</i>
Lithium.....	µg/L	12 2000.0
Manganese.....	µg/L	261.0
Mercury.....	µg/L	3.4
Selenium.....	µg/L	<i>a</i>
Si as SiO ₂	µg/L	81.0
Strontium.....	mg/L	2030.0
Thallium.....	µg/L	<i>a</i>
Zinc.....	µg/L	2470.0
Total Iron.....	µg/L	812.0
Ammonia as N.....	mg/L	0.05
Nitrite Nitrogen.....	mg/L	<i>a</i>
Ortho-phosphate.....	mg/L	0.39

a None detected

NWC TP 7194

TABLE 16. Chemical Analysis of Coso Well 4P-1.

Constituent	Units	22 Aug 91
Calcium.....	mg/L	22.0
Magnesium.....	mg/L	0.57
Sodium.....	mg/L	88.0
Potassium.....	mg/L	38.0
Carbonate.....	mg/L	<i>a</i>
Bicarbonate.....	mg/L	194.0
Chloride.....	mg/L	3.2
Sulfate.....	mg/L	121.0
Nitrate as NO ₃	mg/L	14.2
Nitrate as N.....	mg/L	5.5
Fluoride.....	mg/L	0.56
Bromide.....	mg/L	0.34
pH.....	pH	7.7
Electrical conductivity @ 25 °C.....	µmhos/cm	610.0
Total dissolved solids @ 180 °C.....	mg/L	645.0
Aluminum.....	µg/L	384.0
Antimony.....	µg/L	<i>a</i>
Arsenic.....	µg/L	3.0
Boron.....	mg/L	0.22
Copper.....	µg/L	<i>a</i>
Lithium.....	µg/L	60.0
Manganese.....	µg/L	222.0
Mercury.....	µg/L	4.8
Selenium.....	µg/L	<i>a</i>
Si as SiO ₂	mg/L	259.0
Strontium.....	µg/L	348.0
Thallium.....	µg/L	<i>a</i>
Zinc.....	µg/L	834.0
Total Iron.....	µg/L	530.0
Ammonia as N.....	mg/L	0.1
Nitrite Nitrogen.....	mg/L	0.1
Ortho-phosphate.....	mg/L	0.51
Acidity as H ion.....	mg/L	<i>a</i>

a None detected

NWC TP 7194

TABLE 17. Chemical Analysis of Well 4K-1.

Constituent	Units	19 Mar 91	22 Aug 91
Calcium	mg/L	4.7	5.2
Magnesium	mg/L	0.14	0.17
Sodium	mg/L	38.0	38.0
Potassium	mg/L	6.6	7.9
Carbonate	mg/L	<i>a</i>	<i>a</i>
Bicarbonate	mg/L	75.6	70.4
Chloride	mg/L	2.5	3.5
Sulfate	mg/L	40.0	50.0
Nitrate as NO ₃	mg/L	0.9	4.0
Nitrate as N	mg/L	0.2	0.9
Fluoride	mg/L	1.1	1.1
Bromide	mg/L	<i>a</i>	<i>a</i>
pH	pH	7.2	7.1
Electrical conductivity @ 25 °C	µmhos/cm	240.0	260.0
Total dissolved solids @ 180 °C	mg/L	170.0	425.0
Aluminum	µg/L	199.0	200.0
Antimony	µg/L	<i>a</i>	<i>a</i>
Arsenic	µg/L	<i>a</i>	3.0
Boron	µg/L	<i>a</i>	0.11
Copper	mg/L	12.0	42.0
Lithium	µg/L	20.0	35.0
Manganese	µg/L	51.0	74.0
Mercury	µg/L	4.2	12.0
Selenium	µg/L	<i>a</i>	<i>a</i>
Si as SiO ₂	mg/L	241.0	242.0
Strontium	µg/L	50.0	44.0
Thallium	µg/L	<i>a</i>	<i>a</i>
Zinc	µg/L	898.0	640.0
Total Iron	µg/L	200.0	1300.0
Ammonia as N	mg/L	1.3	3.0
Nitrite Nitrogen	mg/L	<i>a</i>	<i>a</i>
Ortho-phosphate	mg/L	0.27	0.51

^a None detected

NWC TP 7194

TABLE 18. Chemical Analysis of South Pool.

Constituent	Units	19 Mar 91	22 Aug 91
Calcium.....	mg/L	43.0	52.0
Magnesium.....	mg/L	16.0	44.0
Sodium.....	mg/L	11.8	13.6
Potassium.....	mg/L	11.7	9.2
Carbonate.....	mg/L	<i>a</i>	<i>a</i>
Bicarbonate.....	mg/L	<i>a</i>	<i>a</i>
Chloride.....	mg/L	1.8	<i>a</i>
Sulfate.....	mg/L	1450.0	5150.0
Nitrate as N03.....	mg/L	0.4	<i>a</i>
Nitrate as N.....	mg/L	0.1	<i>a</i>
Fluoride.....	mg/L	0.3	<i>a</i>
Bromide.....	mg/L	<i>a</i>	<i>a</i>
pH.....	pH	1.9	2.0
Electrical conductivity @ 25 °C.....	µmhos/cm	7000.0	13 500.0
Total dissolved solids @ 180 °C.....	mg/L	2140.0	6160.0
Acidity as H ion.....	mg/L	24.6	92.0
Aluminum.....	µg/L	35 730.0	266 000.0
Antimony.....	µg/L	<i>a</i>	<i>a</i>
Arsenic.....	µg/L	<i>a</i>	10.0
Boron.....	mg/L	1.5	7.0
Copper.....	µg/L	230.0	647.0
Lithium.....	µg/L	<i>a</i>	85.0
Manganese.....	µg/L	1301.0	1930.0
Mercury.....	µg/L	<i>a</i>	<i>a</i>
Selenium.....	µg/L	<i>a</i>	<i>a</i>
Si as Si02.....	mg/L	218.0	483.0
Strontium.....	µg/L	164.0	97.0
Thallium.....	µg/L	<i>a</i>	1830.0
Zinc.....	µg/L	720.0	1110.0
Total Iron.....	µg/L	26 744.0	272 000.0
Ammonia as N.....	mg/L	28.0	63.0
Nitrite Nitrogen.....	mg/L	<i>a</i>	<i>a</i>
Ortho-phosphate.....	mg/L	0.42	2.55

a None detected

NWC TP 7194

TABLE 19. Chemical Analysis of West Canyon Water.

Constituent	Units	19 Mar 91
Calcium.....	mg/L	70.0
Magnesium.....	mg/L	15.0
Sodium.....	mg/L	79.0
Potassium.....	mg/L	33.0
Carbonate.....	mg/L	<i>a</i>
Bicarbonate.....	mg/L	<i>a</i>
Chloride.....	mg/L	3.2
Sulfate.....	mg/L	490.0
Nitrate as NO ₃	mg/L	<i>a</i>
Nitrate as N.....	mg/L	<i>a</i>
Fluoride.....	mg/L	0.34
Bromide.....	mg/L	<i>a</i>
pH.....	pH	3.5
Electrical conductivity @ 25 °C.....	µmhos/cm	1100.0
Total dissolved solids @ 180 °C.....	mg/L	1000.0
Acidity as H ion.....	mg/L	1.0
Aluminum.....	µg/L	297.0
Antimony.....	µg/L	<i>a</i>
Arsenic.....	µg/L	20.0
Boron.....	mg/L	0.14
Copper.....	µg/L	<i>a</i>
Lithium.....	µg/L	<i>a</i>
Manganese.....	µg/L	342.0
Mercury.....	µg/L	<i>a</i>
Selenium.....	µg/L	<i>a</i>
Si as SiO ₂	mg/L	259.0
Strontium.....	µg/L	195.0
Thallium.....	µg/L	<i>a</i>
Zinc.....	µg/L	25.0
Total Iron.....	µg/L	7942.0
Ammonia as N.....	mg/L	0.71.
Nitrite Nitrogen.....	mg/L	<i>a</i>
Ortho-phosphate.....	mg/L	3.90

a None detected

NWC TP 7194

TABLE 20. Chemical Analysis of Well 4H-4 (Schober's H. W. Well No. 4).

Constituent	Units	19 Mar 91	22 Aug 91
Calcium.....	mg/L	22.0	23.0
Magnesium.....	mg/L	0.17	0.17
Sodium.....	mg/L	52.0	46.0
Potassium.....	mg/L	2.0	2.7
Carbonate.....	mg/L	<i>a</i>	<i>a</i>
Bicarbonate.....	mg/L	95.6	80.0
Chloride.....	mg/L	1.8	1.8
Sulfate.....	mg/L	88.0	89.0
Nitrate as NO ₃	mg/L	0.9	2.7
Nitrate as N.....	mg/L	0.2	0.6
Fluoride.....	mg/L	0.58	0.56
Bromide.....	mg/L	0.05	<i>a</i>
pH.....	pH	8.1	7.9
Electrical conductivity @ 25 °C.....	µmhos/cm	340.0	350.0
Total dissolved solids @ 180 °C.....	mg/L	255.0	335.0
Acidity as H ion.....	mg/L	<i>a</i>	<i>a</i>
Aluminum.....	µg/L	1228.0	631.0
Antimony.....	µg/L	<i>a</i>	<i>a</i>
Arsenic.....	µg/L	7.0	8.0
Boron.....	µg/L	<i>a</i>	<i>a</i>
Copper.....	mg/L	<i>a</i>	<i>a</i>
Lithium.....	µg/L	<i>a</i>	60.0
Manganese.....	µg/L	27.0	48.0
Mercury.....	µg/L	6.3	18.0
Selenium.....	µg/L	<i>a</i>	<i>a</i>
Si as SiO ₂	mg/L	103.0	97.0
Strontium.....	µg/L	276.0	276.0
Thallium.....	µg/L	<i>a</i>	<i>a</i>
Zinc.....	µg/L	25.0	36.0
Total Iron.....	µg/L	736.0	2570.0
Ammonia as N.....	mg/L	0.63	0.37
Nitrite Nitrogen.....	mg/L	0.1	0.1
Ortho-phosphate.....	mg/L	0.21	0.72

a None detected

**TEMPERATURE RECORDINGS OF THE
COSO RESORT AREA WELLS**

The temperature logs from Wells 4H-8, 4K-1, 4P-1, and Schober's Well 4A-4, are graphed in Figures 29 through 32 with the data listed in Appendix D. These data were recorded using the TD Probe System, manufactured by Natural Progress Instruments, Dallas, Texas.

WELL 4H-8

An obstruction was found in Well 4H-8 during temperature logging at a depth of 185 feet on 24 January 1991. An unsuccessful attempt was made to clear the casing using a proven procedure as described in Reference 1. Temperature logging was attempted again on 6 June 1991 to see if the obstruction was caused by water evaporation/salt deposition at the same level. The drop in temperature was probably caused by a lack of steam/hot water entering the unobstructed section of the wellbore. The curve (temperature inversion), while taken in an "empty" wellbore, probably reflects the temperature of the surrounding ground. Temperature logging of this well will continue so any changes that may occur will be recorded.

NWC TP 7194

TEMPERATURE, °F

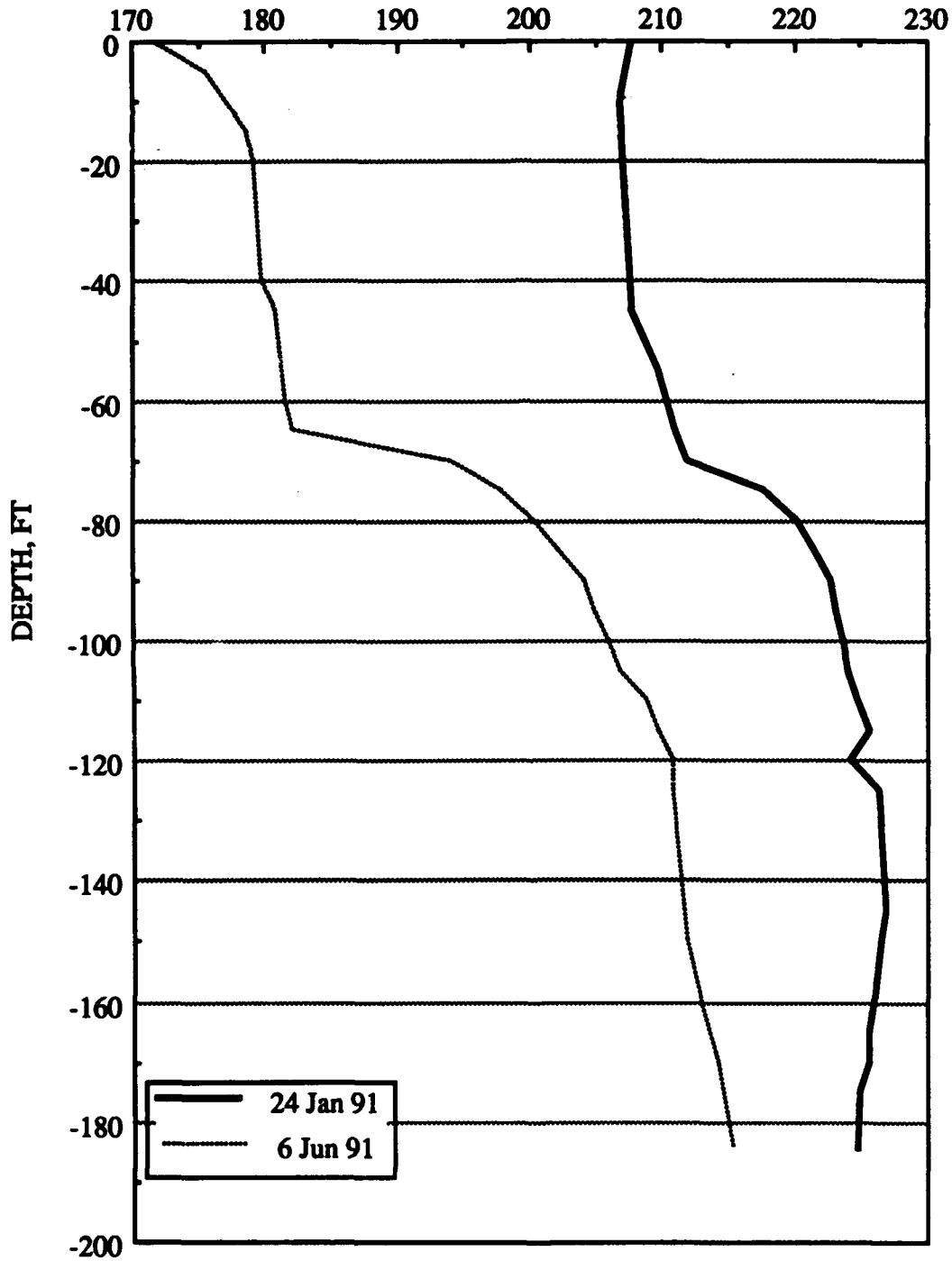


FIGURE 29. Temperature Profile, Well 4H-8.

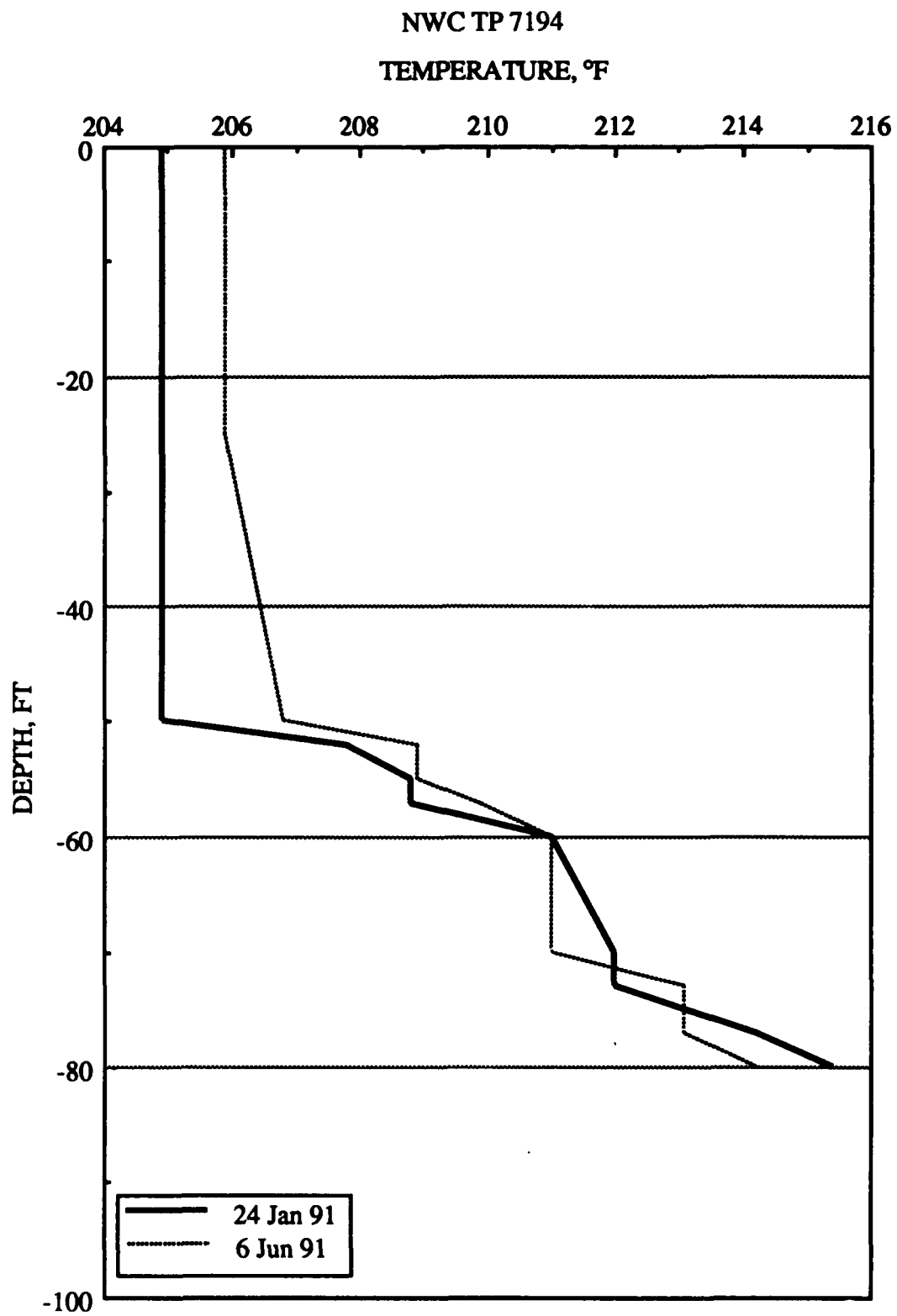


FIGURE 30. Temperature Profile, Well 4K-1.

NWC TP 7194

TEMPERATURE, °F

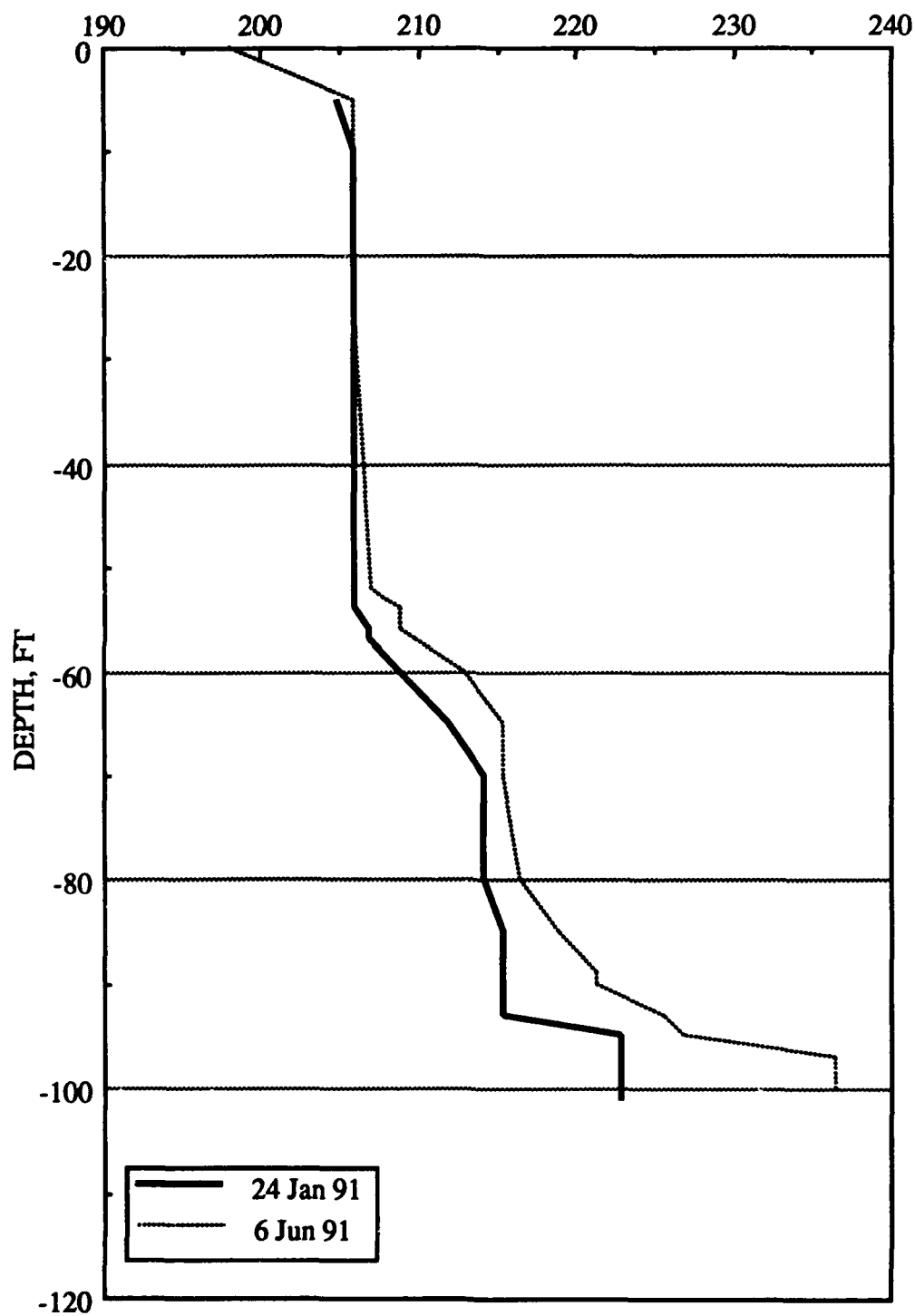


FIGURE 31. Temperature Profile, Well 4P-1.

NWC TP 7194

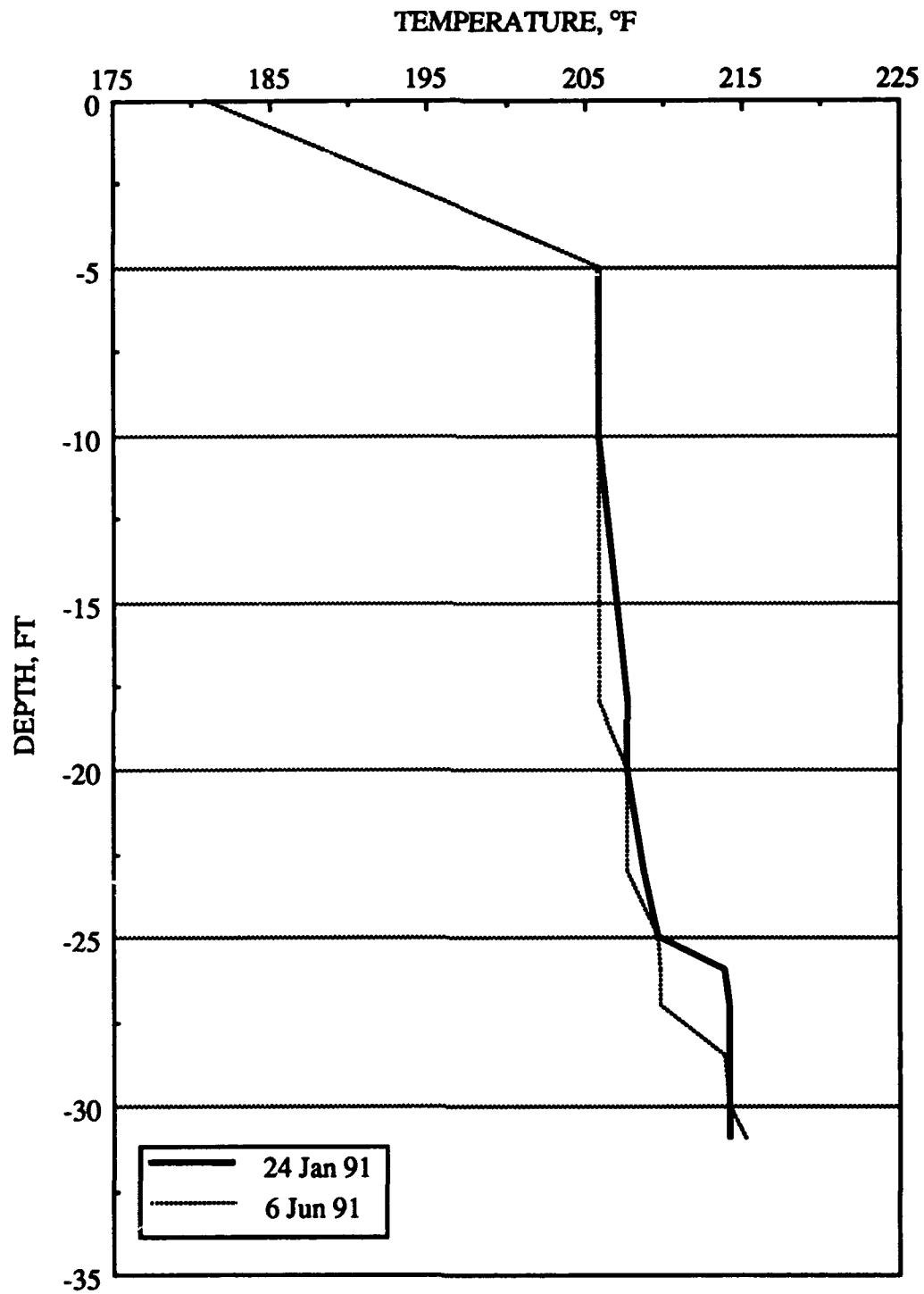


FIGURE 32. Temperature Profile, Well 4A-4.

OTHER GEOTHERMAL ACTIVITY AT COSO HOT SPRINGS

WEST CANYONS

Two canyons directly west of the resort have large areas of warm ground with small areas of thermal alteration. Small bubbling springs occasionally appear in the canyon directly below Rain Station No. 2 along with small scattered steam vents in the same general area. These areas are monitored monthly to record any increase in activity that might occur. Several new water/mud pools have grown in the canyon wash. Table 19 shows the chemistry of these waters.

MUD CRATER 4KC-8

Since renewed activity and growth (October 1989) began in this area, 4KC-8 continued to grow at a slow pace until early summer 1991 when it reached approximately 80 by 100 feet. There are numerous small steam vents and areas of hot ground to the west of the main crater. Growth of this crater is anticipated, but it is currently in a dormant cycle.

MUD CRATER 4KC-9, 4KC-10, AND 4KC-11 (RESORT MUDFIELD)

These mud craters have grown until they joined together and are now referred to as the Coso Resort Area Mudfield (Figure 33). During July the water level began to diminish rapidly with little activity in the area. At the end of the month, the area of 4KC-11 started throwing mud 25 to 35 feet in the air. This area subsided in approximately two weeks when the crater to the north became active in the same manner also lasting about two weeks. In mid September a new vent approximately 12 feet in diameter surfaced on the north bank of 4KC-11. It appears to have relieved the pressure from all the others and is now the only predominant vent blowing steam. This area is monitored several times a week to record changes that may occur.

ACTIVITY EAST OF THE RESORT AND NORTHEAST OF SOUTH POOL

This area, as stated in Reference 1, has two rather large craters and several sites of minor activity. The red and the grey craters were both very active for approximately six weeks during July and August, with perking water and mud, but without growth in size. The rest of the area remained fairly calm during this reporting period.



FIGURE 33. Aerial Photo of Coso Resort Area Mudfield, 24 September 1991.

NWC TP 7194

SUMMARY

During this reporting period, Well 4P-2 continued surging with short bursts of steam until August 1991 when the cycle slowed. During the surging there was a short burst of steam and a longer geysering period (approximately 15 seconds). Steam flow and temperature recording were discontinued at this site on 1 October 1991. Temperature logging and water sampling will start during the next reporting period.

Water levels were measured for this period with the Solist electric water level tape vice the pressurized piping and monitor reading for better accuracy.

The micro-baragraph and hygrothermograph at the mini-weather station were operational on 22 October 1991. Data from this mini-recording station will be used to better determine the relationship between barometric changes and surface thermal activity in the Coso KGRA.

PLANS FOR 1992

PRECISION GRAVITY

Early in the calendar year 1991, personnel from Code 2606 completed installation of a precise gravity network consisting of 63 stations placed in and around the Coso Geothermal Field, including the Hot Springs area. The network was established in an attempt to monitor the response of the local gravity field to the extraction and reinjection of geothermal fluids.

Baseline gravity surveys were run in the spring and fall of 1991. As this report is being published, the fall survey data are being reduced. Comparisons and interpretations between spring and fall 1991 surveys will be included in next year's report as well as comparisons and interpretations with the spring 1992 survey.

MICROEARTHQUAKE STUDIES

Microearthquakes (MEQ) are loosely defined as earthquakes with magnitudes of 4 or less. As a result, the vast majority of microearthquakes are not felt by humans. However, sophisticated equipment known as seismometers are capable of measuring a microearthquake with magnitudes of less than 0. When numerous seismometers are placed in the ground (normally a few miles apart), the location, depth, and magnitude of the earthquakes can be determined accurately. In this manner the response of the geothermal reservoir to geothermal development can be monitored. From this information, it is possible to infer the structure of the geothermal field, as well as its response to the extraction and reinjection of geothermal fluids.

The geothermal operator, California Energy Company, installed an eight-station network in the developed area in 1990. Five additional stations were installed by Code 2606 in August 1991. These new stations will help accurately record seismic events beneath the hot springs. Data from these MEQ stations are currently being reduced and interpreted. This information will be included in next year's report.

NWC TP 7194

REFERENCE

1. Naval Weapons Center. *Coso Monitoring Program, October 1989 Through September 1990*, by J. H. Monahan and D. E. Condon, Comarco Weapons Support Division, Ridgecrest, Calif. China Lake, Calif., NWC, January 1991. 138 pp. (NWC TP 7138, publication UNCLASSIFIED.)

NWC TP 7194

Appendix A
DAILY STEAM FLOW DATA

NWC TP 7194

TABLE A-1. Devils Kitchen Site Steam Flow Data.

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
1 Oct 90	358.4	356.0	5 Nov 90	358.4	350.8
2 Oct 90	358.4	355.2	6 Nov 90	350.8	337.9
3 Oct 90	358.4	354.8	7 Nov 90	357.2	337.1
4 Oct 90	359.7	356.4	8 Nov 90	357.6	346.0
5 Oct 90	359.7	357.6	9 Nov 90	358.9	352.8
6 Oct 90	359.7	357.2	10 Nov 90	358.9	351.6
7 Oct 90	359.3	350.4	11 Nov 90	355.6	349.6
8 Oct 90	358.0	342.4	12 Nov 90	353.6	348.4
9 Oct 90	357.6	348.4	13 Nov 90	356.8	351.2
10 Oct 90	357.2	354.0	14 Nov 90	357.2	354.0
11 Oct 90	358.4	355.6	15 Nov 90	358.0	355.2
12 Oct 90	359.3	354.8	16 Nov 90	359.3	356.8
13 Oct 90	359.7	357.2	17 Nov 90	358.4	356.0
14 Oct 90	359.7	357.2	18 Nov 90	358.9	355.6
15 Oct 90	358.9	355.2	19 Nov 90	356.4	354.0
16 Oct 90	358.4	355.2	20 Nov 90	357.6	350.8
17 Oct 90	358.4	352.4	21 Nov 90	355.6	345.2
18 Oct 90	359.7	356.8	22 Nov 90	357.2	344.0
19 Oct 90	360.1	346.8	23 Nov 90	357.2	353.6
20 Oct 90	359.7	342.4	24 Nov 90	357.6	355.2
21 Oct 90	358.4	347.6	25 Nov 90	358.4	356.0
22 Oct 90	358.0	349.6	26 Nov 90	356.8	340.7
23 Oct 90	358.9	350.8	27 Nov 90	356.0	339.9
24 Oct 90	357.6	352.8	28 Nov 90	356.0	341.2
25 Oct 90	358.4	354.0	29 Nov 90	356.4	345.2
26 Oct 90	358.9	356.4	30 Nov 90	358.0	352.4
27 Oct 90	358.9	354.4	1 Dec 90	358.4	352.0
28 Oct 90	360.1	356.8	2 Dec 90	358.0	349.6
29 Oct 90	359.7	355.2	3 Dec 90	358.4	346.8
30 Oct 90	357.6	352.0	4 Dec 90	357.6	354.8
31 Oct 90	360.9	354.4	5 Dec 90	357.2	352.8
1 Nov 90	357.6	323.9	6 Dec 90	356.4	350.8
2 Nov 90	353.2	337.9	7 Dec 90	358.0	350.4
3 Nov 90	359.3	338.7	8 Dec 90	358.4	351.6
4 Nov 90	358.4	347.6	9 Dec 90	358.9	352.8

NWC TP 7194

TABLE A-1 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
10 Dec 90	358.0	350.4	14 Jan 91	358.0	354.4
11 Dec 90	355.6	347.6	15 Jan 91	357.2	354.4
12 Dec 90	358.4	355.2	16 Jan 91	358.0	350.0
13 Dec 90	360.5	353.2	17 Jan 91	358.4	353.6
14 Dec 90	360.1	348.0	18 Jan 91	358.9	355.2
15 Dec 90	357.2	350.4	19 Jan 91	358.0	356.0
16 Dec 90	353.6	338.7	20 Jan 91	358.4	353.2
17 Dec 90	352.0	338.3	21 Jan 91	355.2	347.2
18 Dec 90	357.2	344.0	22 Jan 91	358.4	349.6
19 Dec 90	358.9	349.2	23 Jan 91	358.0	354.0
20 Dec 90	351.6	345.2	24 Jan 91	358.0	354.4
21 Dec 90	352.0	343.2	25 Jan 91	358.4	354.8
22 Dec 90	353.2	341.2	26 Jan 91	358.0	354.8
23 Dec 90	351.2	339.5	27 Jan 91	358.4	354.8
24 Dec 90	356.0	342.0	28 Jan 91	357.6	354.4
25 Dec 90	358.0	349.6	29 Jan 91	358.4	350.8
26 Dec 90	358.4	351.2	30 Jan 91	358.9	349.6
27 Dec 90	357.6	350.8	31 Jan 91	357.2	351.2
28 Dec 90	358.9	354.8	1 Feb 91	359.3	355.2
29 Dec 90	358.0	344.4	2 Feb 91	358.9	355.6
30 Dec 90	358.0	342.0	3 Feb 91	358.4	354.4
31 Dec 90	357.6	345.2	4 Feb 91	357.2	354.8
1 Jan 91	357.6	350.4	5 Feb 91	357.6	355.6
2 Jan 91	358.4	352.8	6 Feb 91	357.6	354.8
3 Jan 91	358.4	342.0	7 Feb 91	357.6	354.4
4 Jan 91	358.4	354.8	8 Feb 91	359.3	354.8
5 Jan 91	357.2	352.4	9 Feb 91	358.4	356.8
6 Jan 91	357.2	349.6	10 Feb 91	358.9	354.8
7 Jan 91	356.4	352.0	11 Feb 91	356.8	354.8
8 Jan 91	357.2	351.6	12 Feb 91	362.1	353.2
9 Jan 91	356.8	350.4	13 Feb 91	362.1	355.2
10 Jan 91	355.6	348.0	14 Feb 91	357.2	355.2
11 Jan 91	358.0	351.6	15 Feb 91	358.4	355.6
12 Jan 91	358.0	353.2	16 Feb 91	359.3	356.0
13 Jan 91	358.0	355.6	17 Feb 91	358.4	353.2

NWC TP 7194

TABLE A-1 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
18 Feb 91	356.8	350.0	25 Mar 91	357.2	355.2
19 Feb 91	358.4	352.4	26 Mar 91	357.2	354.4
20 Feb 91	358.4	355.6	27 Mar 91	357.2	354.4
21 Feb 91	358.9	355.2	28 Mar 91	359.7	355.2
22 Feb 91	360.1	356.4	29 Mar 91	360.5	356.4
23 Feb 91	359.3	356.8	30 Mar 91	358.4	355.6
24 Feb 91	359.3	354.8	31 Mar 91	358.4	356.4
25 Feb 91	358.4	354.0	1 Apr 91	357.6	355.6
26 Feb 91	360.1	356.4	2 Apr 91	358.9	354.8
27 Feb 91	358.9	356.4	3 Apr 91	358.0	355.2
28 Feb 91	358.4	346.0	4 Apr 91	358.0	354.8
1 Mar 91	358.4	333.1	5 Apr 91	358.0	354.8
2 Mar 91	356.8	344.4	6 Apr 91	355.6	350.0
3 Mar 91	356.0	353.2	7 Apr 91	356.8	352.4
4 Mar 91	357.2	354.0	8 Apr 91	357.6	355.6
5 Mar 91	358.4	355.2	9 Apr 91	357.6	355.2
6 Mar 91	358.0	355.6	10 Apr 91	358.0	355.6
7 Mar 91	358.4	354.4	11 Apr 91	358.4	355.2
8 Mar 91	359.7	356.4	12 Apr 91	358.4	355.6
9 Mar 91	358.4	355.2	13 Apr 91	357.6	354.8
10 Mar 91	359.3	355.2	14 Apr 91	358.0	355.6
11 Mar 91	357.2	354.8	15 Apr 91	358.4	356.0
12 Mar 91	360.1	354.8	16 Apr 91	358.9	355.6
13 Mar 91	360.5	356.8	17 Apr 91	356.8	355.2
14 Mar 91	357.2	356.4	18 Apr 91	359.3	354.8
15 Mar 91	354.8	338.7	19 Apr 91	358.9	356.4
16 Mar 91	357.2	339.5	20 Apr 91	358.9	355.2
17 Mar 91	357.2	354.8	21 Apr 91	358.0	355.2
18 Mar 91	357.6	354.4	22 Apr 91	358.0	355.2
19 Mar 91	356.0	342.0	23 Apr 91	358.0	354.4
20 Mar 91	356.0	354.8	24 Apr 91	358.4	354.0
21 Mar 91	357.6	354.0	25 Apr 91	358.4	354.4
22 Mar 91	358.4	351.6	26 Apr 91	358.4	355.6
23 Mar 91	357.6	351.2	27 Apr 91	358.9	355.2
24 Mar 91	358.9	355.6	28 Apr 91	358.9	356.8

NWC TP 7194

TABLE A-1 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
29 Apr 91	358.9	355.6	3 Jun 91	368.9	366.1
30 Apr 91	358.4	354.8	4 Jun 91	368.9	366.1
1 May 91	357.2	355.6	5 Jun 91	366.9	364.1
2 May 91	358.9	355.2	6 Jun 91	367.7	364.5
3 May 91	357.6	354.8	7 Jun 91	368.1	365.3
4 May 91	357.6	354.4	8 Jun 91	367.3	364.9
5 May 91	357.6	355.6	9 Jun 91	367.3	364.9
6 May 91	358.9	356.0	10 Jun 91	367.3	364.9
7 May 91	358.4	355.6	11 Jun 91	366.9	364.1
8 May 91	358.0	354.0	12 Jun 91	366.5	364.5
9 May 91	358.0	354.4	13 Jun 91	368.1	364.9
10 May 91	358.9	354.8	14 Jun 91	367.7	365.3
11 May 91	358.0	354.0	15 Jun 91	366.9	364.9
12 May 91	358.0	356.4	16 Jun 91	367.7	364.9
13 May 91	358.4	356.0	17 Jun 91	368.1	364.9
14 May 91	358.0	354.8	18 Jun 91	366.5	364.1
15 May 91	357.6	354.8	19 Jun 91	366.9	362.9
16 May 91	357.2	354.0	20 Jun 91	367.7	362.9
17 May 91	358.0	356.0	21 Jun 91	366.5	364.9
18 May 91	358.4	356.0	22 Jun 91	367.3	363.3
19 May 91	359.7	356.4	23 Jun 91	367.3	363.3
20 May 91	359.3	356.0	24 Jun 91	368.1	365.3
21 May 91	358.4	355.6	25 Jun 91	367.7	364.1
22 May 91	357.6	353.6	26 Jun 91	366.9	363.7
23 May 91	356.8	352.4	27 Jun 91	367.7	364.1
24 May 91	358.0	354.4	28 Jun 91	368.1	364.9
25 May 91	357.6	354.8	29 Jun 91	368.5	362.9
26 May 91	358.4	356.0	30 Jun 91	369.7	366.5
27 May 91	359.7	356.4	1 Jul 91	369.3	366.5
28 May 91	359.7	356.0	2 Jul 91	368.1	365.7
29 May 91	367.3	355.6	3 Jul 91	367.3	363.7
30 May 91	366.9	364.5	4 Jul 91	368.9	364.5
31 May 91	366.9	364.5	5 Jul 91	366.9	364.1
1 Jun 91	366.5	364.1	6 Jul 91	366.5	362.9
2 Jun 91	368.1	364.9	7 Jul 91	367.3	363.7

NWC TP 7194

TABLE A-1 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
8 Jul 91	368.1	364.5	12 Aug 91	369.7	365.3
9 Jul 91	369.3	365.3	13 Aug 91	368.1	364.9
10 Jul 91	369.7	364.9	14 Aug 91	367.3	364.9
11 Jul 91	367.7	365.3	15 Aug 91	368.1	366.5
12 Jul 91	366.5	364.1	16 Aug 91	367.7	365.3
13 Jul 91	367.3	363.7	17 Aug 91	366.9	364.1
14 Jul 91	366.9	363.7	18 Aug 91	367.3	363.3
15 Jul 91	367.3	363.7	19 Aug 91	367.7	364.5
16 Jul 91	367.3	365.3	20 Aug 91	368.1	365.7
17 Jul 91	367.3	364.5	21 Aug 91	367.3	364.9
18 Jul 91	368.1	364.9	22 Aug 91	368.9	365.7
19 Jul 91	366.9	364.1	23 Aug 91	367.7	365.3
20 Jul 91	367.7	364.5	24 Aug 91	368.1	363.7
21 Jul 91	367.7	364.1	25 Aug 91	368.9	365.7
22 Jul 91	367.3	364.9	26 Aug 91	368.9	366.1
23 Jul 91	367.7	365.3	27 Aug 91	368.5	365.7
24 Jul 91	366.9	364.5	28 Aug 91	368.9	365.7
25 Jul 91	369.7	365.3	29 Aug 91	367.7	365.3
26 Jul 91	367.7	365.7	30 Aug 91	368.1	364.9
27 Jul 91	367.7	364.5	31 Aug 91	368.5	364.9
28 Jul 91	368.5	364.9	1 Sep 91	366.5	350.4
29 Jul 91	368.9	365.3	2 Sep 91	366.1	363.7
30 Jul 91	369.3	365.9	3 Sep 91	367.7	364.5
31 Jul 91	368.5	366.5	4 Sep 91	366.5	363.3
1 Aug 91	368.5	365.7	5 Sep 91	366.1	362.5
2 Aug 91	367.7	365.7	6 Sep 91	367.3	364.5
3 Aug 91	368.1	364.9	7 Sep 91	366.5	364.5
4 Aug 91	367.7	364.9	8 Sep 91	366.9	364.1
5 Aug 91	367.7	364.9	9 Sep 91	367.7	363.3
6 Aug 91	367.7	364.9	10 Sep 91	368.1	364.9
7 Aug 91	367.3	364.9	11 Sep 91	368.5	364.1
8 Aug 91	367.7	364.9	12 Sep 91	368.1	365.7
9 Aug 91	368.5	365.7	13 Sep 91	368.5	365.3
10 Aug 91	366.9	365.3	14 Sep 91	368.5	364.5
11 Aug 91	367.7	364.9	15 Sep 91	368.1	366.1

NWC TP 7194

TABLE A-1 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
16 Sep 91	368.1	364.5	24 Sep 91	367.3	363.3
17 Sep 91	367.7	364.5	25 Sep 91	367.7	364.9
18 Sep 91	367.7	364.9	26 Sep 91	367.7	365.3
19 Sep 91	368.5	364.5	27 Sep 91	367.3	364.5
20 Sep 91	368.1	365.3	28 Sep 91	367.3	364.1
21 Sep 91	367.7	365.3	29 Sep 91	367.3	363.3
22 Sep 91	367.3	364.5	30 Sep 91	367.7	364.9
23 Sep 91	367.3	364.1			

NWC TP 7194

TABLE A-2. 4P-2 (Two-Inch Steam Well) Flow Data.

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
1 Oct 90	210.4	196.5	10 Nov 90	153.3	133.1
2 Oct 90	219.6	191.1	11 Nov 90	152.0	131.4
3 Oct 90	217.9	199.5	12 Nov 90	155.4	133.1
4 Oct 90	218.8	197.4	13 Nov 90	156.6	130.6
5 Oct 90	221.7	201.1	14 Nov 90	155.8	133.1
6 Oct 90	216.7	199.5	15 Nov 90	146.1	131.0
7 Oct 90	217.9	196.1	16 Nov 90	146.5	131.0
8 Oct 90	218.3	192.3	17 Nov 90	152.8	137.3
9 Oct 90	215.0	196.1	18 Nov 90	152.8	135.2
10 Oct 90	216.7	192.3	19 Nov 90	151.6	135.2
11 Oct 90	217.9	195.3	20 Nov 90	150.7	130.2
12 Oct 90	220.9	197.4	21 Nov 90	148.6	123.0
13 Oct 90	221.7	199.0	22 Nov 90	146.5	117.2
14 Oct 90	221.7	196.1	23 Nov 90	149.5	120.5
15 Oct 90	217.9	195.7	24 Nov 90	154.5	127.2
16 Oct 90	215.8	194.8	25 Nov 90	153.7	129.3
17 Oct 90	213.3	194.8	26 Nov 90	138.1	112.5
18 Oct 90	213.7	196.9	27 Nov 90	144.9	102.5
19 Oct 90	212.5	198.6	28 Nov 90	138.6	100.8
20 Oct 90	213.3	194.8	29 Nov 90	137.3	103.7
21 Oct 90	211.6	194.8	30 Nov 90	144.0	110.9
22 Oct 90	207.9	142.8	1 Dec 90	144.0	109.6
23 Oct 90	159.6	141.9	2 Dec 90	137.3	105.8
29 Oct 90	162.1	152.4	3 Dec 90	132.7	105.4
30 Oct 90	166.3	131.4	4 Dec 90	136.9	101.6
31 Oct 90	161.7	136.5	5 Dec 90	141.9	112.1
1 Nov 90	154.1	137.7	6 Dec 90	141.1	107.9
2 Nov 90	148.6	138.6	7 Dec 90	144.0	116.3
3 Nov 90	149.1	131.0	8 Dec 90	146.1	117.2
4 Nov 90	147.0	129.3	9 Dec 90	146.1	114.2
5 Nov 90	148.6	126.4	10 Dec 90	139.4	112.5
6 Nov 90	150.7	127.6	11 Dec 90	143.6	107.9
7 Nov 90	151.2	129.3	12 Dec 90	133.5	111.3
8 Nov 90	151.6	127.2	13 Dec 90	127.6	110.0
9 Nov 90	147.8	133.1	14 Dec 90	136.9	94.1

NWC TP 7194

TABLE A-2 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
15 Dec 90	146.5	83.6	21 Jan 91	162.1	138.6
16 Dec 90	138.6	10.5	22 Jan 91	172.2	137.7
19 Dec 90	191.1	108.3	23 Jan 91	165.4	134.4
20 Dec 90	195.7	144.4	24 Jan 91	165.0	136.5
21 Dec 90	203.2	181.4	25 Jan 91	170.1	136.9
22 Dec 90	212.5	163.8	26 Jan 91	168.8	136.0
23 Dec 90	211.2	145.3	27 Jan 91	166.3	140.7
24 Dec 90	212.0	134.8	28 Jan 91	165.0	136.5
25 Dec 90	210.0	118.8	29 Jan 91	159.6	132.3
26 Dec 90	216.2	117.6	30 Jan 91	165.0	132.7
27 Dec 90	156.6	141.5	31 Jan 91	160.4	125.1
28 Dec 90	166.7	140.2	1 Feb 91	165.9	124.7
29 Dec 90	163.3	139.0	2 Feb 91	162.1	138.6
30 Dec 90	160.8	133.1	3 Feb 91	170.1	141.1
31 Dec 90	162.9	136.9	4 Feb 91	170.1	146.5
1 Jan 91	165.4	141.5	5 Feb 91	175.5	155.4
2 Jan 91	166.3	144.0	6 Feb 91	188.5	165.0
3 Jan 91	157.0	144.0	7 Feb 91	196.5	163.3
4 Jan 91	158.3	148.6	8 Feb 91	223.4	172.6
5 Jan 91	163.8	145.3	9 Feb 91	225.9	194.0
6 Jan 91	161.2	144.4	10 Feb 91	235.6	192.3
7 Jan 91	159.1	139.0	11 Feb 91	230.9	202.0
8 Jan 91	159.6	139.8	12 Feb 91	212.5	194.8
9 Jan 91	159.6	141.1	13 Feb 91	280.1	211.2
10 Jan 91	162.5	136.5	14 Feb 91	281.3	244.8
11 Jan 91	160.0	135.2	15 Feb 91	254.0	233.9
12 Jan 91	166.7	136.0	16 Feb 91	262.0	238.5
13 Jan 91	168.4	144.9	17 Feb 91	237.7	187.7
14 Jan 91	160.8	139.4	18 Feb 91	212.5	186.0
15 Jan 91	165.4	133.1	19 Feb 91	206.6	174.7
16 Jan 91	166.3	147.4	20 Feb 91	199.9	175.9
17 Jan 91	162.9	143.6	21 Feb 91	197.8	179.3
18 Jan 91	168.4	139.8	22 Feb 91	211.2	180.1
19 Jan 91	166.7	141.1	23 Feb 91	226.7	189.4
20 Jan 91	165.4	143.6	24 Feb 91	217.5	194.8

NWC TP 7194

TABLE A-2 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
25 Feb 91	211.6	181.8	1 Apr 91	349.4	197.4
26 Feb 91	205.8	175.9	2 Apr 91	352.3	192.7
27 Feb 91	189.8	182.2	3 Apr 91	354.0	208.7
28 Feb 91	185.6	177.6	4 Apr 91	355.2	216.2
1 Mar 91	191.5	176.8	5 Apr 91	356.5	210.4
2 Mar 91	191.9	176.4	6 Apr 91	355.7	210.8
3 Mar 91	187.7	171.7	7 Apr 91	354.8	203.2
4 Mar 91	180.1	173.4	8 Apr 91	350.6	196.5
5 Mar 91	184.3	175.1	9 Apr 91	229.7	189.0
6 Mar 91	183.5	173.0	10 Apr 91	212.5	192.3
7 Mar 91	182.2	168.8	11 Apr 91	193.6	186.4
8 Mar 91	179.3	168.4	12 Apr 91	202.8	191.5
9 Mar 91	182.2	170.9	13 Apr 91	203.2	191.5
10 Mar 91	183.1	172.2	14 Apr 91	206.6	191.9
11 Mar 91	181.4	165.0	15 Apr 91	205.8	189.8
12 Mar 91	175.1	162.9	16 Apr 91	202.4	186.4
13 Mar 91	182.7	170.5	17 Apr 91	200.7	190.6
14 Mar 91	174.7	170.1	18 Apr 91	198.6	183.1
15 Mar 91	174.3	162.5	19 Apr 91	241.0	167.5
16 Mar 91	180.1	162.5	20 Apr 91	233.5	202.4
17 Mar 91	177.2	165.4	21 Apr 91	238.1	202.8
18 Mar 91	187.3	166.3	22 Apr 91	240.6	194.8
19 Mar 91	176.4	162.9	23 Apr 91	210.4	191.5
20 Mar 91	178.0	164.6	24 Apr 91	207.4	192.3
21 Mar 91	173.8	163.8	25 Apr 91	202.4	133.1
22 Mar 91	182.2	168.0	26 Apr 91	139.0	60.5
23 Mar 91	183.5	172.2	27 Apr 91	144.4	122.2
24 Mar 91	184.3	169.2	28 Apr 91	152.4	131.0
25 Mar 91	182.2	162.5	29 Apr 91	159.1	128.1
26 Mar 91	174.3	158.3	30 Apr 91	153.7	123.9
27 Mar 91	192.3	148.2	1 May 91	143.2	128.5
28 Mar 91	191.1	184.3	2 May 91	149.1	118.0
29 Mar 91	199.5	180.6	3 May 91	130.6	110.9
30 Mar 91	244.0	193.2	4 May 91	153.3	121.4
31 Mar 91	209.1	193.6	5 May 91	167.1	133.9

NWC TP 7194

TABLE A-2 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
6 May 91	173.4	137.7	10 Jun 91	170.1	150.3
7 May 91	173.0	140.2	11 Jun 91	171.3	139.4
8 May 91	173.0	142.3	12 Jun 91	172.2	135.6
9 May 91	151.2	136.0	13 Jun 91	152.4	130.6
10 May 91	148.6	141.5	14 Jun 91	143.2	127.6
11 May 91	151.6	138.1	15 Jun 91	152.0	125.1
12 May 91	153.3	135.6	16 Jun 91	155.8	129.7
13 May 91	152.4	131.8	17 Jun 91	359.4	137.3
14 May 91	151.2	133.1	18 Jun 91	361.5	134.4
15 May 91	169.2	131.4	19 Jun 91	358.2	134.4
16 May 91	172.6	134.4	20 Jun 91	356.5	133.9
17 May 91	163.3	140.2	21 Jun 91	358.6	133.5
18 May 91	146.1	136.5	22 Jun 91	359.0	136.9
19 May 91	147.0	131.8	23 Jun 91	357.3	133.1
20 May 91	142.3	131.4	24 Jun 91	356.9	131.4
21 May 91	156.6	139.0	25 Jun 91	147.4	130.2
22 May 91	141.5	132.7	26 Jun 91	159.6	133.1
23 May 91	165.9	134.4	27 Jun 91	155.4	141.5
24 May 91	169.6	139.0	28 Jun 91	170.9	149.1
25 May 91	170.9	147.4	29 Jun 91	177.2	162.5
26 May 91	171.7	146.1	30 Jun 91	175.9	160.8
27 May 91	173.0	140.7	1 Jul 91	180.1	153.3
28 May 91	156.2	125.1	2 Jul 91	171.3	152.8
29 May 91	158.3	130.2	3 Jul 91	164.2	138.6
30 May 91	155.8	130.6	4 Jul 91	164.2	128.1
31 May 91	191.5	137.3	5 Jul 91	155.8	122.2
1 Jun 91	181.4	114.6	6 Jul 91	129.3	110.4
2 Jun 91	171.3	164.6	7 Jul 91	122.2	89.4
3 Jun 91	170.1	159.1	8 Jul 91	107.5	56.7
4 Jun 91	174.3	154.5	9 Jul 91	156.6	52.5
5 Jun 91	174.3	162.5	10 Jul 91	147.8	116.3
6 Jun 91	167.5	161.2	11 Jul 91	146.5	96.2
7 Jun 91	173.8	156.6	12 Jul 91	160.4	86.1
8 Jun 91	185.2	162.1	13 Jul 91	154.9	110.4
9 Jun 91	176.4	159.1	14 Jul 91	167.5	133.5

NWC TP 7194

TABLE A-2 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
15 Jul 91	184.3	164.2	19 Aug 91	148.2	132.3
16 Jul 91	182.2	159.6	20 Aug 91	154.5	96.6
17 Jul 91	175.5	127.6	21 Aug 91	143.2	83.6
18 Jul 91	186.4	138.1	22 Aug 91	143.6	124.3
19 Jul 91	180.6	173.0	23 Aug 91	140.2	121.8
20 Jul 91	180.6	167.1	24 Aug 91	141.9	125.6
21 Jul 91	181.8	171.3	25 Aug 91	145.7	122.6
22 Jul 91	176.4	170.9	26 Aug 91	145.3	126.8
23 Jul 91	178.9	172.2	27 Aug 91	148.6	129.7
24 Jul 91	176.4	170.5	28 Aug 91	152.4	132.3
25 Jul 91	176.4	166.3	29 Aug 91	156.6	126.8
26 Jul 91	173.8	166.3	30 Aug 91	148.2	127.6
27 Jul 91	171.7	164.2	31 Aug 91	149.1	128.5
28 Jul 91	173.8	169.2	1 Sep 91	146.5	122.6
29 Jul 91	177.2	167.1	2 Sep 91	141.1	122.6
30 Jul 91	175.5	168.4	3 Sep 91	140.2	121.8
31 Jul 91	171.3	163.8	4 Sep 91	131.8	118.0
1 Aug 91	173.0	160.0	5 Sep 91	152.4	127.6
2 Aug 91	173.8	161.2	6 Sep 91	147.8	133.9
3 Aug 91	173.8	155.4	7 Sep 91	156.2	132.3
4 Aug 91	171.3	148.6	8 Sep 91	153.3	133.1
5 Aug 91	190.2	172.2	9 Sep 91	154.5	132.7
6 Aug 91	293.5	167.1	10 Sep 91	152.0	133.5
7 Aug 91	191.1	175.9	11 Sep 91	149.9	127.6
8 Aug 91	184.3	173.4	12 Sep 91	148.6	123.9
9 Aug 91	181.8	176.4	13 Sep 91	149.9	124.7
10 Aug 91	181.8	168.8	14 Sep 91	147.8	126.0
11 Aug 91	177.6	135.6	15 Sep 91	144.0	127.2
12 Aug 91	142.8	125.6	16 Sep 91	149.1	127.2
13 Aug 91	160.8	128.5	17 Sep 91	147.8	122.2
14 Aug 91	144.9	130.2	18 Sep 91	147.8	121.4
15 Aug 91	149.9	132.3	19 Sep 91	146.1	125.6
16 Aug 91	148.2	129.3	20 Sep 91	149.9	127.6
17 Aug 91	150.3	129.3	21 Sep 91	151.2	126.8
18 Aug 91	150.7	129.3	22 Sep 91	144.4	124.7

NWC TP 7194

TABLE A-2 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
23 Sep 91	147.0	123.9	27 Sep 91	151.6	125.6
24 Sep 91	141.9	127.6	28 Sep 91	148.6	125.1
25 Sep 91	149.1	126.4	29 Sep 91	147.4	126.0
26 Sep 91	147.4	127.2	30 Sep 91	148.2	121.8

NWC TP 7194

TABLE A-3. 4H-4 (Eight-Inch Well) Steam Flow Data.

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
1 Oct 90	200.3	193.5	5 Nov 90	202.1	193.9
2 Oct 90	202.9	198.2	6 Nov 90	199.0	185.7
3 Oct 90	199.8	188.7	7 Nov 90	187.3	184.4
4 Oct 90	197.4	187.7	8 Nov 90	187.5	184.8
5 Oct 90	203.7	195.3	9 Nov 90	191.0	185.5
6 Oct 90	204.8	199.8	10 Nov 90	193.9	189.6
7 Oct 90	204.4	193.3	11 Nov 90	193.5	190.2
8 Oct 90	193.3	185.2	12 Nov 90	196.6	189.4
9 Oct 90	198.8	188.1	13 Nov 90	201.7	195.3
10 Oct 90	206.6	198.8	14 Nov 90	201.7	197.4
11 Oct 90	206.8	199.0	15 Nov 90	197.8	189.6
12 Oct 90	201.7	196.1	16 Nov 90	194.5	190.2
13 Oct 90	204.0	200.9	17 Nov 90	199.4	193.5
14 Oct 90	203.7	197.8	18 Nov 90	200.3	197.4
15 Oct 90	203.7	197.6	19 Nov 90	202.7	199.2
16 Oct 90	205.0	201.1	20 Nov 90	203.1	188.7
17 Oct 90	201.3	192.2	21 Nov 90	190.4	184.4
18 Oct 90	205.4	195.9	22 Nov 90	188.1	181.8
19 Oct 90	207.5	198.4	23 Nov 90	195.9	188.1
20 Oct 90	198.6	190.6	24 Nov 90	197.6	194.3
21 Oct 90	199.6	191.8	25 Nov 90	212.0	196.6
22 Oct 90	202.9	198.8	26 Nov 90	212.4	187.7
23 Oct 90	202.7	197.6	27 Nov 90	188.1	182.6
24 Oct 90	199.0	193.5	28 Nov 90	184.6	179.3
25 Oct 90	202.3	196.8	29 Nov 90	194.9	182.4
26 Oct 90	202.9	199.0	30 Nov 90	197.2	194.5
27 Oct 90	201.1	198.4	1 Dec 90	196.6	192.4
28 Oct 90	201.1	196.1	2 Dec 90	192.6	186.1
29 Oct 90	201.5	196.6	3 Dec 90	189.8	184.6
30 Oct 90	198.6	190.8	4 Dec 90	193.7	188.9
31 Oct 90	200.3	195.5	5 Dec 90	195.7	192.2
1 Nov 90	201.3	194.9	6 Dec 90	192.9	187.5
2 Nov 90	195.3	190.0	7 Dec 90	194.1	190.4
3 Nov 90	190.6	184.4	8 Dec 90	195.1	191.4
4 Nov 90	193.9	183.4	9 Dec 90	194.9	191.4

NWC TP 7194

TABLE A-3 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
10 Dec 90	197.8	194.1	16 Jan 91	155.0	148.4
11 Dec 90	200.5	196.1	17 Jan 91	154.6	148.2
12 Dec 90	200.3	195.3	18 Jan 91	158.7	148.0
13 Dec 90	196.8	193.9	19 Jan 91	159.3	149.7
14 Dec 90	194.5	188.1	20 Jan 91	157.1	148.4
15 Dec 90	201.3	193.3	21 Jan 91	148.6	144.7
16 Dec 90	198.4	191.0	22 Jan 91	156.1	144.3
17 Dec 90	191.6	183.4	23 Jan 91	157.1	145.6
18 Dec 90	207.7	194.3	24 Jan 91	154.8	145.2
19 Dec 90	212.2	204.4	25 Jan 91	155.2	144.9
20 Dec 90	205.0	192.0	26 Jan 91	154.0	144.1
21 Dec 90	194.9	185.9	27 Jan 91	153.2	144.3
22 Dec 90	191.6	184.6	28 Jan 91	153.6	146.4
23 Dec 90	186.9	178.3	29 Jan 91	146.4	136.3
25 Dec 90	100.1	96.8	30 Jan 91	144.5	134.9
26 Dec 90	143.3	97.2	31 Jan 91	147.2	136.1
28 Dec 90	192.4	186.1	1 Feb 91	148.9	139.6
29 Dec 90	191.8	184.4	2 Feb 91	145.4	139.4
30 Dec 90	177.8	83.1	3 Feb 91	146.2	135.1
31 Dec 90	97.9	51.8	4 Feb 91	145.8	135.5
1 Jan 91	102.6	96.6	5 Feb 91	147.8	138.6
2 Jan 91	195.7	144.9	6 Feb 91	141.5	134.9
3 Jan 91	192.6	126.4	7 Feb 91	148.9	134.3
4 Jan 91	174.3	156.1	8 Feb 91	149.7	135.9
5 Jan 91	166.5	157.1	9 Feb 91	145.8	138.0
6 Jan 91	172.5	156.5	10 Feb 91	147.0	135.1
7 Jan 91	174.6	157.9	11 Feb 91	144.9	135.5
8 Jan 91	154.8	149.9	12 Feb 91	142.7	136.1
9 Jan 91	155.0	150.5	13 Feb 91	142.7	135.3
10 Jan 91	154.6	148.6	14 Feb 91	137.3	133.2
11 Jan 91	151.5	146.6	15 Feb 91	144.1	136.9
12 Jan 91	156.7	148.0	16 Feb 91	143.1	138.4
13 Jan 91	160.6	149.7	17 Feb 91	139.6	133.6
14 Jan 91	155.6	147.6	18 Feb 91	133.6	128.1
15 Jan 91	165.1	149.7	19 Feb 91	161.6	156.5

NWC TP 7194

TABLE A-3 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
20 Feb 91	170.0	159.5	27 Mar 91	175.4	166.7
21 Feb 91	170.6	165.3	28 Mar 91	171.9	165.7
22 Feb 91	175.8	166.3	29 Mar 91	174.1	166.9
23 Feb 91	171.1	166.7	30 Mar 91	171.9	164.1
24 Feb 91	167.6	160.6	31 Mar 91	176.8	165.7
25 Feb 91	168.6	164.1	1 Apr 91	177.2	166.3
26 Feb 91	176.4	165.5	2 Apr 91	174.1	165.7
27 Feb 91	177.0	170.9	3 Apr 91	171.3	165.9
28 Feb 91	178.3	175.2	4 Apr 91	174.3	166.9
1 Mar 91	177.2	164.1	5 Apr 91	175.4	170.2
2 Mar 91	164.5	157.9	6 Apr 91	178.5	172.9
3 Mar 91	170.2	157.7	7 Apr 91	176.4	169.4
4 Mar 91	169.2	165.1	8 Apr 91	170.0	162.0
5 Mar 91	172.5	168.6	9 Apr 91	176.4	162.0
6 Mar 91	175.4	167.8	10 Apr 91	182.8	172.1
7 Mar 91	173.7	165.1	11 Apr 91	172.9	168.8
8 Mar 91	177.2	166.9	12 Apr 91	173.3	168.2
9 Mar 91	177.6	170.9	13 Apr 91	175.4	167.8
10 Mar 91	182.0	173.5	14 Apr 91	182.8	170.4
11 Mar 91	178.0	164.9	15 Apr 91	180.9	175.0
12 Mar 91	178.0	164.9	16 Apr 91	179.5	172.5
13 Mar 91	182.8	172.5	17 Apr 91	177.2	171.3
14 Mar 91	181.3	174.3	18 Apr 91	175.6	170.4
15 Mar 91	178.0	168.8	19 Apr 91	175.0	170.4
16 Mar 91	173.1	166.9	20 Apr 91	179.3	171.5
17 Mar 91	173.9	166.3	21 Apr 91	176.4	171.7
18 Mar 91	181.1	176.2	22 Apr 91	177.8	172.1
19 Mar 91	181.8	172.3	23 Apr 91	178.7	173.9
20 Mar 91	177.0	171.3	24 Apr 91	178.5	172.7
21 Mar 91	177.2	167.8	25 Apr 91	177.4	170.2
22 Mar 91	172.1	165.7	26 Apr 91	173.7	169.0
23 Mar 91	179.3	168.0	27 Apr 91	175.4	170.6
24 Mar 91	184.4	174.1	28 Apr 91	175.4	168.2
25 Mar 91	179.5	176.6	29 Apr 91	175.4	171.7
26 Mar 91	182.8	173.7	30 Apr 91	178.5	171.3

NWC TP 7194

TABLE A-3 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
1 May 91	180.5	176.4	5 Jun 91	180.5	176.8
2 May 91	178.9	173.3	6 Jun 91	178.5	176.0
3 May 91	174.6	169.2	7 Jun 91	182.2	174.3
4 May 91	171.5	166.7	8 Jun 91	180.3	173.1
5 May 91	173.3	166.1	9 Jun 91	178.5	168.8
6 May 91	175.2	171.1	10 Jun 91	176.8	167.6
7 May 91	173.9	168.8	11 Jun 91	176.8	170.2
8 May 91	177.4	171.7	12 Jun 91	177.8	172.1
9 May 91	178.3	172.5	13 Jun 91	180.7	173.5
10 May 91	173.9	171.1	14 Jun 91	181.3	174.6
11 May 91	173.7	169.4	15 Jun 91	177.0	172.3
12 May 91	173.3	168.8	16 Jun 91	176.6	171.3
13 May 91	177.2	170.4	17 Jun 91	176.2	170.2
14 May 91	176.8	168.8	18 Jun 91	178.3	172.1
15 May 91	171.7	167.8	19 Jun 91	179.1	174.6
16 May 91	174.1	168.4	20 Jun 91	178.9	173.9
17 May 91	174.6	171.3	21 Jun 91	179.9	175.4
18 May 91	176.2	171.3	22 Jun 91	179.5	174.6
19 May 91	172.9	169.0	23 Jun 91	180.3	174.8
20 May 91	172.3	170.0	24 Jun 91	179.9	175.4
21 May 91	176.2	172.1	25 Jun 91	179.5	176.8
22 May 91	173.3	168.4	26 Jun 91	179.9	176.6
23 May 91	171.9	166.7	27 Jun 91	180.1	177.6
24 May 91	167.2	163.9	28 Jun 91	179.7	177.2
25 May 91	168.4	163.9	29 Jun 91	179.9	174.6
26 May 91	171.1	166.1	30 Jun 91	175.2	168.4
27 May 91	173.3	168.4	1 Jul 91	174.3	166.7
28 May 91	170.9	165.5	2 Jul 91	175.6	163.7
29 May 91	171.3	168.2	3 Jul 91	174.3	163.9
30 May 91	177.6	170.4	4 Jul 91	178.0	164.7
31 May 91	181.8	169.4	5 Jul 91	177.6	166.3
1 Jun 91	177.8	174.3	6 Jul 91	177.0	169.4
2 Jun 91	177.2	174.6	7 Jul 91	177.4	170.2
3 Jun 91	177.6	175.0	8 Jul 91	177.8	175.8
4 Jun 91	178.3	175.6	9 Jul 91	180.7	174.3

NWC TP 7194

TABLE A-3 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
10 Jul 91	179.5	171.7	14 Aug 91	179.5	171.9
11 Jul 91	177.8	169.0	15 Aug 91	179.3	171.9
12 Jul 91	177.4	166.9	16 Aug 91	179.9	171.9
13 Jul 91	179.1	169.2	17 Aug 91	180.5	170.4
14 Jul 91	181.1	172.3	18 Aug 91	179.9	170.0
15 Jul 91	178.9	172.7	19 Aug 91	179.5	169.8
16 Jul 91	179.3	169.2	20 Aug 91	188.5	176.4
17 Jul 91	178.3	171.1	21 Aug 91	185.9	169.2
18 Jul 91	180.1	170.6	22 Aug 91	171.9	154.6
19 Jul 91	181.3	172.7	23 Aug 91	161.0	149.1
20 Jul 91	180.5	172.3	24 Aug 91	170.4	158.1
21 Jul 91	177.6	169.6	25 Aug 91	190.4	170.6
22 Jul 91	177.8	169.8	26 Aug 91	198.4	189.8
23 Jul 91	179.1	169.4	27 Aug 91	198.4	176.6
24 Jul 91	179.5	171.1	28 Aug 91	180.3	171.9
25 Jul 91	179.7	171.1	29 Aug 91	177.4	167.2
26 Jul 91	177.6	168.4	30 Aug 91	178.7	168.0
27 Jul 91	174.8	166.9	31 Aug 91	181.5	171.3
28 Jul 91	176.6	166.7	1 Sep 91	179.5	169.8
29 Jul 91	177.2	164.3	2 Sep 91	177.0	166.9
30 Jul 91	177.0	167.4	3 Sep 91	176.2	166.7
31 Jul 91	176.8	171.5	4 Sep 91	179.9	168.6
1 Aug 91	177.2	170.6	5 Sep 91	182.2	175.6
2 Aug 91	178.9	171.1	6 Sep 91	181.3	176.8
3 Aug 91	180.5	170.6	7 Sep 91	180.1	172.9
4 Aug 91	180.5	172.7	8 Sep 91	182.2	173.9
5 Aug 91	182.4	173.5	9 Sep 91	185.9	180.7
6 Aug 91	181.8	172.9	10 Sep 91	183.2	178.3
7 Aug 91	179.3	168.2	11 Sep 91	179.5	176.2
8 Aug 91	176.6	164.9	12 Sep 91	178.7	173.3
9 Aug 91	179.3	168.8	13 Sep 91	179.1	172.1
10 Aug 91	181.1	171.5	14 Sep 91	179.7	173.1
11 Aug 91	176.2	167.8	15 Sep 91	177.4	171.3
12 Aug 91	175.2	172.5	16 Sep 91	178.7	170.0
13 Aug 91	179.1	169.8	17 Sep 91	178.3	172.9

NWC TP 7194

TABLE A-3 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
18 Sep 91	180.1	169.0	25 Sep 91	177.4	168.4
19 Sep 91	178.7	170.6	26 Sep 91	178.7	170.6
20 Sep 91	178.5	171.5	27 Sep 91	179.3	173.3
21 Sep 91	179.1	172.3	28 Sep 91	179.9	172.3
22 Sep 91	175.8	170.4	29 Sep 91	177.0	167.6
23 Sep 91	176.0	170.9	30 Sep 91	175.2	167.4
24 Sep 91	176.4	168.0			

NWC TP 7194

TABLE A-4. 4A-2 and 4A-3 (Schober's Resort Wells) Steam Flow Data.

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
1 Oct 90	1336.9	1329.3	5 Nov 90	1347.4	1306.7
2 Oct 90	1339.9	1314.3	6 Nov 90	1315.8	1290.1
3 Oct 90	1335.4	1309.7	7 Nov 90	1326.3	1288.6
4 Oct 90	1333.9	1306.7	8 Nov 90	1333.9	1294.6
5 Oct 90	1338.4	1317.3	9 Nov 90	1335.4	1305.2
6 Oct 90	1349.0	1318.8	10 Nov 90	1332.4	1306.7
7 Oct 90	1347.4	1312.7	11 Nov 90	1330.8	1308.2
8 Oct 90	1330.8	1296.1	12 Nov 90	1338.4	1303.7
9 Oct 90	1327.8	1299.2	13 Nov 90	1339.9	1308.2
10 Oct 90	1335.4	1303.7	14 Nov 90	1344.4	1314.3
11 Oct 90	1335.4	1311.2	15 Nov 90	1335.4	1314.3
12 Oct 90	1333.9	1311.2	16 Nov 90	1339.9	1314.3
13 Oct 90	1338.4	1309.7	17 Nov 90	1341.4	1318.8
14 Oct 90	1332.4	1309.7	18 Nov 90	1338.4	1314.3
15 Oct 90	1332.4	1309.7	19 Nov 90	1332.4	1315.8
16 Oct 90	1332.4	1311.2	20 Nov 90	1341.4	1308.2
17 Oct 90	1330.8	1302.2	21 Nov 90	1317.3	1300.7
18 Oct 90	1332.4	1305.2	22 Nov 90	1332.4	1294.6
19 Oct 90	1336.9	1303.7	23 Nov 90	1338.4	1299.2
20 Oct 90	1327.8	1297.7	24 Nov 90	1341.4	1311.2
21 Oct 90	1324.8	1294.6	25 Nov 90	1352.0	1308.2
22 Oct 90	1330.8	1302.2	3 Dec 90	1320.3	1302.2
23 Oct 90	1329.3	1300.7	4 Dec 90	1326.3	1293.1
24 Oct 90	1324.8	1305.2	5 Dec 90	1339.9	1305.2
25 Oct 90	1330.8	1300.7	6 Dec 90	1338.4	1300.7
26 Oct 90	1329.3	1305.2	7 Dec 90	1332.4	1308.2
27 Oct 90	1326.3	1302.2	8 Dec 90	1335.4	1306.7
28 Oct 90	1332.4	1302.2	9 Dec 90	1344.4	1309.7
29 Oct 90	1333.9	1299.2	10 Dec 90	1347.4	1308.2
30 Oct 90	1333.9	1299.2	11 Dec 90	1349.0	1324.8
31 Oct 90	1339.9	1303.7	12 Dec 90	1330.8	1312.7
1 Nov 90	1336.9	1297.7	13 Dec 90	1335.4	1308.2
2 Nov 90	1312.7	1290.1	14 Dec 90	1332.4	1308.2
3 Nov 90	1330.8	1291.6	15 Dec 90	1335.4	1315.8
4 Nov 90	1332.4	1294.6	16 Dec 90	1332.4	1315.8

NWC TP 7194

TABLE A-4 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
17 Dec 90	1327.8	1306.7	21 Jan 91	1288.6	1275.0
18 Dec 90	1361.0	1306.7	22 Jan 91	1296.1	1273.5
19 Dec 90	1356.5	1318.8	23 Jan 91	1291.6	1276.5
20 Dec 90	1324.8	1311.2	24 Jan 91	1291.6	1278.0
21 Dec 90	1314.3	1293.1	25 Jan 91	1305.2	1284.1
22 Dec 90	1302.2	1291.6	26 Jan 91	1296.1	1284.1
23 Dec 90	1312.7	1293.1	27 Jan 91	1300.7	1284.1
24 Dec 90	1333.9	1302.2	28 Jan 91	1303.7	1282.6
25 Dec 90	1320.3	1306.7	29 Jan 91	1291.6	1275.0
26 Dec 90	1327.8	1305.2	30 Jan 91	1294.6	1273.5
27 Dec 90	1329.3	1300.7	31 Jan 91	1293.1	1270.5
28 Dec 90	1339.9	1311.2	1 Feb 91	1308.2	1278.0
29 Dec 90	1324.8	1297.7	2 Feb 91	1294.6	1273.5
30 Dec 90	1314.3	1290.1	3 Feb 91	1297.7	1270.5
31 Dec 90	1312.7	1291.6	4 Feb 91	1294.6	1269.0
1 Jan 91	1318.8	1297.7	5 Feb 91	1306.7	1269.0
2 Jan 91	1324.8	1300.7	6 Feb 91	1302.2	1273.5
3 Jan 91	1321.8	1303.7	7 Feb 91	1297.7	1275.0
4 Jan 91	1317.3	1303.7	8 Feb 91	1296.1	1269.0
5 Jan 91	1321.8	1303.7	9 Feb 91	1297.7	1267.5
6 Jan 91	1306.7	1293.1	10 Feb 91	1299.2	1272.0
7 Jan 91	1317.3	1291.6	11 Feb 91	1290.1	1275.0
8 Jan 91	1318.8	1297.7	12 Feb 91	1297.7	1267.5
9 Jan 91	1312.7	1294.6	13 Feb 91	1299.2	1266.0
10 Jan 91	1309.7	1287.1	14 Feb 91	1294.6	1270.5
11 Jan 91	1311.2	1288.6	15 Feb 91	1302.2	1275.0
12 Jan 91	1309.7	1293.1	16 Feb 91	1305.2	1272.0
13 Jan 91	1306.7	1288.6	17 Feb 91	1290.1	1264.5
14 Jan 91	1305.2	1282.6	18 Feb 91	1278.0	1256.9
15 Jan 91	1311.2	1272.0	19 Feb 91	1302.2	1255.4
16 Jan 91	1287.1	1276.5	20 Feb 91	1345.9	1293.1
17 Jan 91	1305.2	1275.0	21 Feb 91	1352.0	1332.4
18 Jan 91	1303.7	1287.1	22 Feb 91	1358.0	1335.4
19 Jan 91	1302.2	1291.6	23 Feb 91	1355.0	1341.4
20 Jan 91	1303.7	1287.1	24 Feb 91	1349.0	1332.4

NWC TP 7194

TABLE A-4 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
25 Feb 91	1349.0	1332.4	1 Apr 91	1278.0	1237.3
26 Feb 91	1359.5	1339.9	2 Apr 91	1272.0	1225.2
27 Feb 91	1364.0	1318.8	3 Apr 91	1279.5	1249.4
28 Feb 91	1332.4	1311.2	4 Apr 91	1279.5	1244.8
1 Mar 91	1367.1	1269.0	5 Apr 91	1294.6	1255.4
2 Mar 91	1284.1	1238.8	6 Apr 91	1296.1	1259.9
3 Mar 91	1284.1	1241.8	7 Apr 91	1276.5	1241.8
4 Mar 91	1288.6	1249.4	8 Apr 91	1273.5	1232.8
5 Mar 91	1293.1	1249.4	9 Apr 91	1285.6	1231.3
6 Mar 91	1290.1	1243.3	10 Apr 91	1287.1	1258.4
7 Mar 91	1285.6	1246.4	11 Apr 91	1278.0	1222.2
8 Mar 91	1290.1	1250.9	12 Apr 91	1272.0	1232.8
9 Mar 91	1291.6	1256.9	13 Apr 91	1278.0	1238.8
10 Mar 91	1279.5	1240.3	14 Apr 91	1287.1	1243.3
11 Mar 91	1285.6	1249.4	15 Apr 91	1294.6	1250.9
12 Mar 91	1291.6	1244.8	16 Apr 91	1285.6	1241.8
13 Mar 91	1293.1	1253.9	17 Apr 91	1275.0	1238.8
14 Mar 91	1294.6	1256.9	18 Apr 91	1281.1	1238.8
15 Mar 91	1273.5	1247.9	19 Apr 91	1284.1	1243.3
16 Mar 91	1284.1	1244.8	20 Apr 91	1285.6	1255.4
17 Mar 91	1279.5	1243.3	21 Apr 91	1282.6	1246.4
18 Mar 91	1293.1	1252.4	22 Apr 91	1281.1	1246.4
19 Mar 91	1308.2	1262.9	23 Apr 91	1294.6	1250.9
20 Mar 91	1356.5	1261.4	24 Apr 91	1287.1	1244.8
21 Mar 91	1339.9	1232.8	25 Apr 91	1290.1	1253.9
22 Mar 91	1264.5	1223.7	26 Apr 91	1287.1	1241.8
23 Mar 91	1262.9	1228.2	27 Apr 91	1293.1	1259.9
24 Mar 91	1272.0	1232.8	28 Apr 91	1282.6	1238.8
25 Mar 91	1261.4	1226.7	29 Apr 91	1293.1	1247.9
26 Mar 91	1276.5	1220.7	30 Apr 91	1287.1	1246.4
27 Mar 91	1231.3	1213.2	1 May 91	1287.1	1252.4
28 Mar 91	1259.9	1216.2	2 May 91	1287.1	1246.4
29 Mar 91	1272.0	1231.3	3 May 91	1287.1	1241.8
30 Mar 91	1266.0	1243.3	4 May 91	1284.1	1249.4
31 Mar 91	1270.5	1234.3	5 May 91	1279.5	1244.8

NWC TP 7194

TABLE A-4 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
6 May 91	1302.2	1266.0	10 Jun 91	1326.3	1305.2
7 May 91	1299.2	1261.4	11 Jun 91	1335.4	1312.7
8 May 91	1302.2	1264.5	12 Jun 91	1330.8	1297.7
9 May 91	1285.6	1249.4	13 Jun 91	1326.3	1297.7
10 May 91	1288.6	1246.4	14 Jun 91	1321.8	1288.6
11 May 91	1282.6	1241.8	15 Jun 91	1326.3	1296.1
12 May 91	1284.1	1246.4	16 Jun 91	1320.3	1293.1
13 May 91	1291.6	1253.9	17 Jun 91	1326.3	1300.7
14 May 91	1288.6	1249.4	18 Jun 91	1329.3	1311.2
15 May 91	1294.6	1256.9	19 Jun 91	1326.3	1305.2
16 May 91	1293.1	1258.4	20 Jun 91	1324.8	1296.1
17 May 91	1291.6	1247.9	21 Jun 91	1326.3	1294.6
18 May 91	1291.6	1244.8	22 Jun 91	1324.8	1297.7
19 May 91	1281.1	1246.4	23 Jun 91	1324.8	1288.6
20 May 91	1270.5	1244.8	24 Jun 91	1321.8	1293.1
21 May 91	1288.6	1262.9	25 Jun 91	1321.8	1290.1
22 May 91	1279.5	1256.9	26 Jun 91	1320.3	1294.6
23 May 91	1297.7	1253.9	27 Jun 91	1315.8	1290.1
24 May 91	1293.1	1258.4	28 Jun 91	1314.3	1290.1
25 May 91	1303.7	1266.0	29 Jun 91	1320.3	1291.6
26 May 91	1305.2	1276.5	30 Jun 91	1315.8	1290.1
27 May 91	1302.2	1272.0	1 Jul 91	1333.9	1309.7
28 May 91	1297.7	1253.9	2 Jul 91	1329.3	1311.2
29 May 91	1308.2	1266.0	3 Jul 91	1330.8	1311.2
30 May 91	1306.7	1249.4	4 Jul 91	1332.4	1312.7
31 May 91	1282.6	1249.4	5 Jul 91	1327.8	1311.2
1 Jun 91	1317.3	1262.9	6 Jul 91	1323.3	1305.2
2 Jun 91	1314.3	1284.1	7 Jul 91	1323.3	1296.1
3 Jun 91	1323.3	1282.6	8 Jul 91	1315.8	1291.6
4 Jun 91	1321.8	1291.6	9 Jul 91	1326.3	1302.2
5 Jun 91	1323.3	1294.6	10 Jul 91	1324.8	1308.2
6 Jun 91	1327.8	1290.1	11 Jul 91	1321.8	1306.7
7 Jun 91	1326.3	1290.1	12 Jul 91	1311.2	1305.2
8 Jun 91	1327.8	1300.7	13 Jul 91	1321.8	1305.2
9 Jun 91	1329.3	1297.7	14 Jul 91	1323.3	1303.7

NWC TP 7194

TABLE A-4 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
15 Jul 91	1314.3	1300.7	19 Aug 91	1306.7	1291.6
16 Jul 91	1317.3	1300.7	20 Aug 91	1309.7	1296.1
17 Jul 91	1321.8	1300.7	21 Aug 91	1306.7	1291.6
18 Jul 91	1318.8	1305.2	22 Aug 91	1308.2	1285.6
19 Jul 91	1314.3	1306.7	23 Aug 91	1311.2	1293.1
20 Jul 91	1318.8	1290.1	24 Aug 91	1308.2	1297.7
21 Jul 91	1312.7	1294.6	25 Aug 91	1318.8	1291.6
22 Jul 91	1309.7	1294.6	26 Aug 91	1306.7	1293.1
23 Jul 91	1320.3	1296.1	27 Aug 91	1308.2	1287.1
24 Jul 91	1320.3	1293.1	28 Aug 91	1303.7	1278.0
25 Jul 91	1314.3	1282.6	29 Aug 91	1305.2	1278.0
26 Jul 91	1308.2	1290.1	30 Aug 91	1305.2	1288.6
27 Jul 91	1311.2	1282.6	31 Aug 91	1303.7	1282.6
28 Jul 91	1308.2	1294.6	1 Sep 91	1308.2	1290.1
29 Jul 91	1315.8	1293.1	2 Sep 91	1300.7	1285.6
30 Jul 91	1312.7	1294.6	3 Sep 91	1302.2	1284.1
31 Jul 91	1302.2	1282.6	4 Sep 91	1309.7	1287.1
1 Aug 91	1312.7	1288.6	5 Sep 91	1379.1	1284.1
2 Aug 91	1315.8	1294.6	6 Sep 91	1377.6	1312.7
3 Aug 91	1311.2	1300.7	7 Sep 91	1327.8	1297.7
4 Aug 91	1308.2	1284.1	8 Sep 91	1330.8	1308.2
5 Aug 91	1306.7	1287.1	9 Sep 91	1329.3	1308.2
6 Aug 91	1311.2	1287.1	10 Sep 91	1321.8	1297.7
7 Aug 91	1305.2	1281.1	11 Sep 91	1320.3	1305.2
8 Aug 91	1309.7	1287.1	12 Sep 91	1318.8	1303.7
9 Aug 91	1312.7	1299.2	13 Sep 91	1314.3	1302.2
10 Aug 91	1315.8	1299.2	14 Sep 91	1318.8	1296.1
11 Aug 91	1303.7	1293.1	15 Sep 91	1317.3	1302.2
12 Aug 91	1300.7	1293.1	16 Sep 91	1317.3	1303.7
13 Aug 91	1308.2	1293.1	17 Sep 91	1327.8	1305.2
14 Aug 91	1305.2	1296.1	18 Sep 91	1324.8	1305.2
15 Aug 91	1300.7	1287.1	19 Sep 91	1320.3	1303.7
16 Aug 91	1297.7	1282.6	20 Sep 91	1318.8	1302.2
17 Aug 91	1306.7	1282.6	21 Sep 91	1312.7	1296.1
18 Aug 91	1306.7	1293.1	22 Sep 91	1311.2	1291.6

NWC TP 7194

TABLE A-4 (Cont'd)

Date	High, lb/h	Low, lb/h	Date	High, lb/h	Low, lb/h
23 Sep 91	1311.2	1290.1	27 Sep 91	1317.3	1300.7
24 Sep 91	1312.7	1291.6	28 Sep 91	1309.7	1294.6
25 Sep 91	1314.3	1299.2	29 Sep 91	1311.2	1293.1
26 Sep 91	1317.3	1297.7	30 Sep 91	1311.2	1291.6

NWC TP 7194

Appendix B
DAILY TEMPERATURE DATA

NWC TP 7194

TABLE B-1. 4P-2 (Two-Inch Steam Well) Steam Temperature.

Date	High, °F	Low, °F	Date	High, °F	Low, °F
9 Oct 90	207	196	15 Nov 90	214	195
10 Oct 90	213	194	16 Nov 90	218	200
11 Oct 90	213	199	17 Nov 90	220	201
12 Oct 90	215	199	18 Nov 90	215	201
13 Oct 90	213	200	19 Nov 90	214	197
14 Oct 90	214	198	20 Nov 90	211	196
15 Oct 90	212	199	21 Nov 90	208	195
16 Oct 90	212	197	22 Nov 90	209	193
17 Oct 90	209	199	23 Nov 90	214	196
18 Oct 90	210	198	24 Nov 90	214	199
19 Oct 90	208	189	25 Nov 90	213	193
20 Oct 90	208	188	26 Nov 90	194	192
21 Oct 90	209	195	27 Nov 90	202	191
22 Oct 90	218	194	28 Nov 90	206	192
23 Oct 90	212	198	29 Nov 90	210	193
24 Oct 90	210	197	30 Nov 90	208	199
25 Oct 90	214	195	1 Dec 90	213	198
26 Oct 90	211	196	2 Dec 90	212	194
29 Oct 90	208	205	3 Dec 90	209	192
30 Oct 90	215	197	4 Dec 90	213	195
31 Oct 90	219	200	5 Dec 90	211	195
1 Nov 90	209	192	6 Dec 90	208	196
2 Nov 90	197	181	7 Dec 90	209	197
3 Nov 90	207	192	8 Dec 90	209	197
4 Nov 90	217	198	9 Dec 90	211	196
5 Nov 90	214	199	10 Dec 90	210	196
6 Nov 90	206	181	11 Dec 90	207	192
7 Nov 90	206	179	12 Dec 90	205	193
8 Nov 90	213	195	13 Dec 90	205	193
9 Nov 90	217	199	14 Dec 90	205	188
10 Nov 90	220	203	15 Dec 90	205	189
11 Nov 90	215	200	16 Dec 90	198	182
12 Nov 90	216	200	17 Dec 90	201	182
13 Nov 90	214	198	18 Dec 90	207	190
14 Nov 90	212	197	19 Dec 90	197	182

NWC TP 7194

TABLE B-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
20 Dec 90	192	182	24 Jan 91	208	189
21 Dec 90	196	184	25 Jan 91	209	195
22 Dec 90	197	184	26 Jan 91	208	194
23 Dec 90	200	184	27 Jan 91	206	193
24 Dec 90	198	185	28 Jan 91	205	192
25 Dec 90	201	186	29 Jan 91	203	191
26 Dec 90	203	189	30 Jan 91	206	190
27 Dec 90	207	189	31 Jan 91	207	192
28 Dec 90	204	190	1 Feb 91	213	196
29 Dec 90	205	189	2 Feb 91	212	197
30 Dec 90	205	190	3 Feb 91	210	196
31 Dec 90	207	189	4 Feb 91	212	196
1 Jan 91	210	192	5 Feb 91	211	196
2 Jan 91	207	194	6 Feb 91	210	194
3 Jan 91	200	192	7 Feb 91	209	195
4 Jan 91	200	194	8 Feb 91	218	197
5 Jan 91	207	193	9 Feb 91	215	201
6 Jan 91	205	194	10 Feb 91	213	200
7 Jan 91	206	194	11 Feb 91	213	201
8 Jan 91	205	194	12 Feb 91	217	202
9 Jan 91	202	192	13 Feb 91	213	202
10 Jan 91	206	192	14 Feb 91	212	202
11 Jan 91	209	196	15 Feb 91	212	203
12 Jan 91	211	197	16 Feb 91	210	182
13 Jan 91	211	197	17 Feb 91	210	183
14 Jan 91	209	193	18 Feb 91	207	193
15 Jan 91	207	189	19 Feb 91	211	195
16 Jan 91	196	187	20 Feb 91	215	201
17 Jan 91	200	186	21 Feb 91	214	200
18 Jan 91	208	191	22 Feb 91	215	201
19 Jan 91	208	193	23 Feb 91	211	197
20 Jan 91	205	186	24 Feb 91	209	198
21 Jan 91	192	181	25 Feb 91	211	196
22 Jan 91	206	187	26 Feb 91	215	201
23 Jan 91	208	192	27 Feb 91	209	195

NWC TP 7194

TABLE B-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
28 Feb 91	200	193	4 Apr 91	214	201
1 Mar 91	203	192	5 Apr 91	216	203
2 Mar 91	207	192	6 Apr 91	215	203
3 Mar 91	209	198	7 Apr 91	212	201
4 Mar 91	205	195	8 Apr 91	207	202
5 Mar 91	208	194	9 Apr 91	218	204
6 Mar 91	209	194	10 Apr 91	211	193
7 Mar 91	210	195	11 Apr 91	197	186
8 Mar 91	211	200	12 Apr 91	210	193
9 Mar 91	209	200	13 Apr 91	209	197
10 Mar 91	209	193	14 Apr 91	209	199
11 Mar 91	206	193	15 Apr 91	211	197
12 Mar 91	210	196	16 Apr 91	212	202
13 Mar 91	207	197	17 Apr 91	212	201
14 Mar 91	206	190	18 Apr 91	213	200
15 Mar 91	202	193	19 Apr 91	215	202
16 Mar 91	207	193	20 Apr 91	213	202
17 Mar 91	204	195	21 Apr 91	213	202
18 Mar 91	207	193	22 Apr 91	210	202
19 Mar 91	204	192	23 Apr 91	217	203
20 Mar 91	203	192	24 Apr 91	213	204
21 Mar 91	208	197	25 Apr 91	212	202
22 Mar 91	207	201	26 Apr 91	215	203
23 Mar 91	208	198	27 Apr 91	216	203
24 Mar 91	209	187	28 Apr 91	214	204
25 Mar 91	204	195	29 Apr 91	213	203
26 Mar 91	203	195	30 Apr 91	214	206
27 Mar 91	205	194	1 May 91	212	199
28 Mar 91	209	199	2 May 91	211	198
29 Mar 91	208	194	3 May 91	213	199
30 Mar 91	212	200	4 May 91	213	201
31 Mar 91	212	200	5 May 91	214	203
1 Apr 91	212	202	6 May 91	215	202
2 Apr 91	214	201	7 May 91	219	210
3 Apr 91	216	200	8 May 91	218	206

NWC TP 7194

TABLE B-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
9 May 91	209	200	19 Jun 91	219	208
10 May 91	209	195	20 Jun 91	216	205
11 May 91	212	199	21 Jun 91	219	207
12 May 91	214	202	22 Jun 91	220	208
13 May 91	216	204	23 Jun 91	219	209
14 May 91	214	201	24 Jun 91	219	207
15 May 91	215	204	25 Jun 91	219	208
16 May 91	214	204	26 Jun 91	220	209
17 May 91	214	202	27 Jun 91	214	207
18 May 91	212	201	28 Jun 91	214	209
19 May 91	213	202	29 Jun 91	218	208
20 May 91	211	203	30 Jun 91	222	208
21 May 91	211	208	1 Jul 91	223	208
22 May 91	217	204	2 Jul 91	226	217
23 May 91	216	203	3 Jul 91	225	214
24 May 91	216	204	4 Jul 91	226	214
25 May 91	217	207	5 Jul 91	225	213
26 May 91	219	206	6 Jul 91	222	212
27 May 91	219	206	7 Jul 91	224	208
28 May 91	218	200	8 Jul 91	216	209
29 May 91	219	200	9 Jul 91	221	209
30 May 91	216	199	10 Jul 91	221	211
31 May 91	211	197	11 Jul 91	222	210
1 Jun 91	215	202	12 Jul 91	224	211
2 Jun 91	218	205	13 Jul 91	222	210
3 Jun 91	220	207	14 Jul 91	220	211
4 Jun 91	220	212	15 Jul 91	220	212
5 Jun 91	219	212	16 Jul 91	222	211
6 Jun 91	220	210	17 Jul 91	220	213
7 Jun 91	221	211	18 Jul 91	226	212
8 Jun 91	222	212	19 Jul 91	220	212
9 Jun 91	224	212	20 Jul 91	219	211
10 Jun 91	223	213	21 Jul 91	222	211
17 Jun 91	221	214	22 Jul 91	222	211
18 Jun 91	222	210	23 Jul 91	223	212

NWC TP 7194

TABLE B-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
24 Jul 91	223	213	28 Aug 91	220	208
25 Jul 91	222	212	29 Aug 91	219	206
26 Jul 91	224	213	30 Aug 91	223	208
27 Jul 91	224	214	31 Aug 91	225	208
28 Jul 91	224	214	1 Sep 91	221	210
29 Jul 91	227	214	2 Sep 91	223	209
30 Jul 91	224	215	3 Sep 91	223	211
31 Jul 91	220	213	4 Sep 91	224	212
1 Aug 91	223	216	5 Sep 91	219	206
2 Aug 91	224	213	6 Sep 91	217	203
3 Aug 91	224	214	7 Sep 91	220	205
4 Aug 91	220	213	8 Sep 91	219	209
5 Aug 91	218	213	9 Sep 91	216	209
6 Aug 91	219	211	10 Sep 91	217	210
7 Aug 91	222	210	11 Sep 91	219	210
8 Aug 91	224	212	12 Sep 91	222	209
9 Aug 91	225	212	13 Sep 91	221	209
10 Aug 91	223	211	14 Sep 91	221	209
11 Aug 91	221	210	15 Sep 91	219	208
12 Aug 91	218	212	16 Sep 91	221	208
13 Aug 91	222	211	17 Sep 91	224	212
14 Aug 91	222	213	18 Sep 91	225	215
15 Aug 91	221	211	19 Sep 91	223	214
16 Aug 91	221	212	20 Sep 91	222	213
17 Aug 91	223	212	21 Sep 91	222	213
18 Aug 91	224	211	22 Sep 91	221	212
19 Aug 91	221	210	23 Sep 91	221	213
20 Aug 91	223	211	24 Sep 91	222	212
21 Aug 91	223	213	25 Sep 91	222	213
22 Aug 91	223	210	26 Sep 91	219	213
23 Aug 91	222	212	27 Sep 91	222	211
24 Aug 91	223	213	28 Sep 91	221	211
25 Aug 91	226	213	29 Sep 91	223	212
26 Aug 91	219	211	30 Sep 91	224	215
27 Aug 91	218	208			

NWC TP 7194

TABLE B-2. 4A-2 and 4A-3 (Schober's Resort Wells) Steam Temperature.

Date	High, °F	Low, °F	Date	High, °F	Low, °F
1 Oct 90	223	222	5 Nov 90	226	221
2 Oct 90	226	222	6 Nov 90	221	217
3 Oct 90	225	222	7 Nov 90	222	217
4 Oct 90	228	223	8 Nov 90	226	220
5 Oct 90	226	224	9 Nov 90	226	223
6 Oct 90	227	223	10 Nov 90	227	223
7 Oct 90	226	222	11 Nov 90	226	222
8 Oct 90	224	220	12 Nov 90	224	221
9 Oct 90	224	220	13 Nov 90	224	220
10 Oct 90	224	222	14 Nov 90	224	221
11 Oct 90	227	222	15 Nov 90	225	221
12 Oct 90	227	223	16 Nov 90	225	223
13 Oct 90	228	224	17 Nov 90	227	222
14 Oct 90	228	222	18 Nov 90	224	222
15 Oct 90	225	221	19 Nov 90	223	220
16 Oct 90	225	222	20 Nov 90	226	220
17 Oct 90	225	222	21 Nov 90	226	220
18 Oct 90	224	220	22 Nov 90	226	220
19 Oct 90	226	222	23 Nov 90	225	221
20 Oct 90	224	222	24 Nov 90	224	222
21 Oct 90	224	222	25 Nov 90	224	220
22 Oct 90	225	221	2 Dec 90	220	220
23 Oct 90	226	222	3 Dec 90	223	221
24 Oct 90	226	223	4 Dec 90	222	219
25 Oct 90	227	223	5 Dec 90	224	219
26 Oct 90	225	223	6 Dec 90	224	220
27 Oct 90	227	223	7 Dec 90	225	222
28 Oct 90	227	222	8 Dec 90	226	223
29 Oct 90	224	221	9 Dec 90	228	222
30 Oct 90	227	220	10 Dec 90	225	222
31 Oct 90	225	221	11 Dec 90	225	220
1 Nov 90	224	220	12 Dec 90	225	222
2 Nov 90	223	220	13 Dec 90	225	220
3 Nov 90	224	220	14 Dec 90	225	222
4 Nov 90	226	222	15 Dec 90	224	222

NWC TP 7194

TABLE B-2 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
16 Dec 90	223	218	20 Jan 91	224	218
17 Dec 90	223	217	21 Jan 91	219	214
18 Dec 90	224	220	22 Jan 91	223	218
19 Dec 90	224	218	23 Jan 91	224	219
20 Dec 90	221	216	24 Jan 91	225	219
21 Dec 90	222	219	25 Jan 91	225	221
22 Dec 90	222	219	26 Jan 91	225	222
23 Dec 90	223	219	27 Jan 91	225	220
24 Dec 90	223	219	28 Jan 91	222	219
25 Dec 90	226	220	29 Jan 91	226	218
26 Dec 90	222	219	30 Jan 91	226	219
27 Dec 90	223	219	31 Jan 91	222	218
28 Dec 90	223	220	1 Feb 91	225	221
29 Dec 90	223	220	2 Feb 91	225	221
30 Dec 90	223	219	3 Feb 91	226	221
31 Dec 90	223	219	4 Feb 91	225	221
1 Jan 91	226	220	5 Feb 91	225	221
2 Jan 91	225	219	6 Feb 91	225	219
3 Jan 91	222	219	7 Feb 91	226	219
4 Jan 91	222	219	8 Feb 91	227	222
5 Jan 91	223	218	9 Feb 91	227	222
6 Jan 91	223	219	10 Feb 91	224	222
7 Jan 91	223	219	11 Feb 91	225	219
8 Jan 91	225	219	12 Feb 91	224	219
9 Jan 91	223	220	13 Feb 91	225	220
10 Jan 91	222	219	14 Feb 91	223	219
11 Jan 91	223	220	15 Feb 91	226	222
12 Jan 91	224	221	16 Feb 91	226	221
13 Jan 91	224	221	17 Feb 91	224	218
14 Jan 91	224	219	18 Feb 91	224	217
15 Jan 91	226	219	19 Feb 91	226	222
16 Jan 91	222	217	20 Feb 91	227	221
17 Jan 91	225	217	21 Feb 91	224	220
18 Jan 91	226	222	22 Feb 91	225	221
19 Jan 91	226	222	23 Feb 91	225	220

NWC TP 7194

TABLE B-2 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
24 Feb 91	225	220	31 Mar 91	226	222
25 Feb 91	225	221	1 Apr 91	224	218
26 Feb 91	228	222	2 Apr 91	224	221
27 Feb 91	224	214	3 Apr 91	226	221
28 Feb 91	219	214	4 Apr 91	225	221
1 Mar 91	220	216	5 Apr 91	228	224
2 Mar 91	224	219	6 Apr 91	226	221
3 Mar 91	226	221	7 Apr 91	225	221
4 Mar 91	220	217	8 Apr 91	224	219
5 Mar 91	223	217	9 Apr 91	228	223
6 Mar 91	224	218	10 Apr 91	228	223
7 Mar 91	222	217	11 Apr 91	225	220
8 Mar 91	225	220	12 Apr 91	226	221
9 Mar 91	224	220	13 Apr 91	226	222
10 Mar 91	221	218	14 Apr 91	226	221
11 Mar 91	223	220	15 Apr 91	225	220
12 Mar 91	224	220	16 Apr 91	225	221
13 Mar 91	224	217	17 Apr 91	225	221
14 Mar 91	222	216	18 Apr 91	225	220
15 Mar 91	223	220	19 Apr 91	226	222
16 Mar 91	224	220	20 Apr 91	225	221
17 Mar 91	224	220	21 Apr 91	226	221
18 Mar 91	223	220	22 Apr 91	224	220
19 Mar 91	222	218	23 Apr 91	226	221
20 Mar 91	222	217	24 Apr 91	224	220
21 Mar 91	222	218	25 Apr 91	226	219
22 Mar 91	223	219	26 Apr 91	225	220
23 Mar 91	223	220	27 Apr 91	226	223
24 Mar 91	223	218	28 Apr 91	226	221
25 Mar 91	221	217	29 Apr 91	226	222
26 Mar 91	224	219	30 Apr 91	225	222
27 Mar 91	222	219	1 May 91	224	219
28 Mar 91	224	220	2 May 91	224	219
29 Mar 91	226	221	3 May 91	226	221
30 Mar 91	225	222	4 May 91	226	222

NWC TP 7194

TABLE B-2 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
5 May 91	228	222	9 Jun 91	229	225
6 May 91	227	221	10 Jun 91	228	224
7 May 91	230	225	11 Jun 91	229	225
8 May 91	227	221	12 Jun 91	230	223
9 May 91	223	221	13 Jun 91	225	223
10 May 91	226	220	14 Jun 91	227	224
11 May 91	226	221	15 Jun 91	226	224
12 May 91	226	222	16 Jun 91	228	223
13 May 91	226	220	17 Jun 91	227	222
14 May 91	226	220	18 Jun 91	229	223
15 May 91	226	221	19 Jun 91	228	224
16 May 91	225	221	20 Jun 91	226	223
17 May 91	227	220	21 Jun 91	227	224
18 May 91	226	221	22 Jun 91	229	223
19 May 91	227	222	23 Jun 91	227	223
20 May 91	224	221	24 Jun 91	226	224
21 May 91	226	222	25 Jun 91	231	224
22 May 91	228	221	26 Jun 91	230	224
23 May 91	227	221	27 Jun 91	226	224
24 May 91	228	222	28 Jun 91	226	223
25 May 91	230	224	29 Jun 91	228	223
26 May 91	228	224	30 Jun 91	227	224
27 May 91	227	223	1 Jul 91	228	224
28 May 91	225	222	2 Jul 91	230	223
29 May 91	227	223	3 Jul 91	230	225
30 May 91	227	220	4 Jul 91	230	224
31 May 91	225	219	5 Jul 91	230	225
1 Jun 91	226	221	6 Jul 91	228	224
2 Jun 91	226	221	7 Jul 91	230	221
3 Jun 91	227	221	8 Jul 91	227	222
4 Jun 91	228	223	9 Jul 91	228	223
5 Jun 91	226	220	10 Jul 91	227	224
6 Jun 91	226	221	11 Jul 91	228	223
7 Jun 91	229	225	12 Jul 91	227	221
8 Jun 91	228	225	13 Jul 91	228	222

NWC TP 7194

TABLE B-2 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
14 Jul 91	228	223	18 Aug 91	228	223
15 Jul 91	226	222	19 Aug 91	227	225
16 Jul 91	229	223	20 Aug 91	228	224
17 Jul 91	226	222	21 Aug 91	229	224
18 Jul 91	227	224	22 Aug 91	229	222
19 Jul 91	226	221	23 Aug 91	227	223
20 Jul 91	227	224	24 Aug 91	227	224
21 Jul 91	228	222	25 Aug 91	228	223
22 Jul 91	226	222	26 Aug 91	227	222
23 Jul 91	227	223	27 Aug 91	226	222
24 Jul 91	226	223	28 Aug 91	227	224
25 Jul 91	227	222	29 Aug 91	228	224
26 Jul 91	229	224	30 Aug 91	227	224
27 Jul 91	229	225	31 Aug 91	227	224
28 Jul 91	230	225	1 Sep 91	228	225
29 Jul 91	228	223	2 Sep 91	230	225
30 Jul 91	230	224	3 Sep 91	229	223
31 Jul 91	228	222	4 Sep 91	228	223
1 Aug 91	227	223	5 Sep 91	227	221
2 Aug 91	225	222	6 Sep 91	224	219
3 Aug 91	227	223	7 Sep 91	225	220
4 Aug 91	227	224	8 Sep 91	228	222
5 Aug 91	228	223	9 Sep 91	227	223
6 Aug 91	230	223	10 Sep 91	226	223
7 Aug 91	227	225	11 Sep 91	226	222
8 Aug 91	229	224	12 Sep 91	227	222
9 Aug 91	227	224	13 Sep 91	227	222
10 Aug 91	227	223	14 Sep 91	227	223
11 Aug 91	229	223	15 Sep 91	226	223
12 Aug 91	228	224	16 Sep 91	228	224
13 Aug 91	229	224	17 Sep 91	229	224
14 Aug 91	227	221	18 Sep 91	229	225
15 Aug 91	227	221	19 Sep 91	229	225
16 Aug 91	228	223	20 Sep 91	228	223
17 Aug 91	228	224	21 Sep 91	226	223

NWC TP 7194

TABLE B-2 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
22 Sep 91	226	222	27 Sep 91	227	222
23 Sep 91	227	222	28 Sep 91	227	223
24 Sep 91	228	224	29 Sep 91	229	224
25 Sep 91	230	223	30 Sep 91	229	223
26 Sep 91	227	223			

NWC TP 7194

Appendix C
WEATHER STATION NO. 1 DATA

NWC TP 7194

TABLE C-1. Weather Station No. 1 Ambient Temperature.

Date	High, °F	Low, °F	Date	High, °F	Low, °F
22 Oct 90	68	51	26 Nov 90	47	37
23 Oct 90	72	47	27 Nov 90	45	24
24 Oct 90	78	51	28 Nov 90	49	27
25 Oct 90	77	54	29 Nov 90	51	28
26 Oct 90	76	51	30 Nov 90	52	36
27 Oct 90	77	53	1 Dec 90	56	31
28 Oct 90	77	54	2 Dec 90	58	33
29 Oct 90	76	51	11 Dec 90	60	43
30 Oct 90	71	48	12 Dec 90	50	35
31 Oct 90	70	44	13 Dec 90	44	29
1 Nov 90	59	41	14 Dec 90	42	25
2 Nov 90	51	38	15 Dec 90	42	24
3 Nov 90	63	36	16 Dec 90	44	24
4 Nov 90	59	37	17 Dec 90	44	27
5 Nov 90	57	37	18 Dec 90	48	27
6 Nov 90	59	40	19 Dec 90	50	27
7 Nov 90	59	38	20 Dec 90	32	13
8 Nov 90	65	38	21 Dec 90	26	8
9 Nov 90	69	45	22 Dec 90	26	8
10 Nov 90	70	45	23 Dec 90	27	8
11 Nov 90	73	45	24 Dec 90	34	10
12 Nov 90	72	44	25 Dec 90	44	17
13 Nov 90	70	45	26 Dec 90	48	21
14 Nov 90	68	48	27 Dec 90	43	25
15 Nov 90	65	48	28 Dec 90	41	19
16 Nov 90	65	49	29 Dec 90	42	19
17 Nov 90	67	49	30 Dec 90	37	17
18 Nov 90	61	45	31 Dec 90	43	17
19 Nov 90	53	44	1 Jan 91	50	24
20 Nov 90	56	39	2 Jan 91	51	28
21 Nov 90	50	34	3 Jan 91	42	32
22 Nov 90	59	35	4 Jan 91	39	33
23 Nov 90	62	34	5 Jan 91	43	30
24 Nov 90	63	38	6 Jan 91	41	28
25 Nov 90	62	37	7 Jan 91	46	31

NWC TP 7194

TABLE C-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
8 Jan 91	45	27	12 Feb 91	67	35
9 Jan 91	44	30	13 Feb 91	70	36
10 Jan 91	48	26	14 Feb 91	67	44
11 Jan 91	48	26	15 Feb 91	69	43
12 Jan 91	54	25	16 Feb 91	67	44
13 Jan 91	58	26	17 Feb 91	64	40
14 Jan 91	57	28	18 Feb 91	51	37
15 Jan 91	58	26	19 Feb 91	63	35
16 Jan 91	55	33	20 Feb 91	67	31
17 Jan 91	60	33	21 Feb 91	70	34
18 Jan 91	54	28	22 Feb 91	67	35
19 Jan 91	53	24	23 Feb 91	69	44
20 Jan 91	48	25	24 Feb 91	67	43
21 Jan 91	36	34	25 Feb 91	64	30
22 Jan 91	47	15	26 Feb 91	62	31
23 Jan 91	50	17	27 Feb 91	55	35
24 Jan 91	50	18	28 Feb 91	42	35
25 Jan 91	51	18	1 Mar 91	47	35
26 Jan 91	53	20	2 Mar 91	58	33
27 Jan 91	54	22	3 Mar 91	60	31
28 Jan 91	52	18	4 Mar 91	53	39
29 Jan 91	48	20	5 Mar 91	53	37
30 Jan 91	51	16	6 Mar 91	47	30
31 Jan 91	52	21	7 Mar 91	54	31
1 Feb 91	56	25	8 Mar 91	55	26
2 Feb 91	52	23	9 Mar 91	55	31
3 Feb 91	58	25	10 Mar 91	59	32
4 Feb 91	60	27	11 Mar 91	54	27
5 Feb 91	63	32	12 Mar 91	51	24
6 Feb 91	65	46	13 Mar 91	51	29
7 Feb 91	64	35	14 Mar 91	52	34
8 Feb 91	62	31	15 Mar 91	39	27
9 Feb 91	64	30	16 Mar 91	50	22
10 Feb 91	63	30	17 Mar 91	48	27
11 Feb 91	60	33	18 Mar 91	50	39

NWC TP 7194

TABLE C-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
19 Mar 91	48	30	30 Apr 91	72	41
20 Mar 91	35	29	1 May 91	60	38
21 Mar 91	48	27	2 May 91	62	30
22 Mar 91	48	26	3 May 91	64	33
23 Mar 91	49	29	4 May 91	70	42
24 Mar 91	53	27	5 May 91	75	44
25 Mar 91	48	30	6 May 91	81	47
26 Mar 91	46	27	7 May 91	81	49
27 Mar 91	34	27	8 May 91	80	48
28 Mar 91	52	28	9 May 91	61	42
29 Mar 91	60	31	10 May 91	58	42
30 Mar 91	59	40	11 May 91	63	34
31 Mar 91	62	37	12 May 91	69	37
1 Apr 91	62	38	13 May 91	75	41
2 Apr 91	62	34	14 May 91	74	46
3 Apr 91	69	45	15 May 91	76	43
4 Apr 91	75	41	16 May 91	80	43
5 Apr 91	80	41	17 May 91	68	44
6 Apr 91	78	43	18 May 91	64	33
7 Apr 91	66	38	19 May 91	65	40
8 Apr 91	62	48	20 May 91	59	37
10 Apr 91	66	39	21 May 91	72	56
11 Apr 91	50	33	22 May 91	67	46
12 Apr 91	60	37	23 May 91	78	45
13 Apr 91	65	37	24 May 91	82	49
14 Apr 91	70	36	25 May 91	85	53
15 Apr 91	75	34	26 May 91	84	54
22 Apr 91	65	43	27 May 91	81	52
23 Apr 91	69	35	28 May 91	80	48
24 Apr 91	68	38	29 May 91	82	42
25 Apr 91	67	43	30 May 91	77	52
26 Apr 91	64	33	31 May 91	76	51
27 Apr 91	68	40	1 Jun 91	79	62
28 Apr 91	68	47	2 Jun 91	79	50
29 Apr 91	74	39	3 Jun 91	86	51

NWC TP 7194

TABLE C-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
4 Jun 91	85	53	9 Jul 91	90	58
5 Jun 91	84	53	10 Jul 91	92	60
6 Jun 91	85	47	11 Jul 91	94	61
7 Jun 91	85	49	12 Jul 91	95	62
8 Jun 91	86	49	13 Jul 91	93	55
9 Jun 91	91	53	14 Jul 91	89	59
10 Jun 91	95	61	15 Jul 91	79	55
11 Jun 91	95	67	16 Jul 91	92	68
12 Jun 91	94	58	17 Jul 91	92	59
13 Jun 91	89	54	18 Jul 91	91	58
14 Jun 91	85	50	19 Jul 91	86	59
15 Jun 91	85	45	20 Jul 91	84	52
16 Jun 91	92	44	21 Jul 91	88	55
17 Jun 91	95	67	22 Jul 91	91	57
18 Jun 91	89	57	23 Jul 91	94	58
19 Jun 91	85	53	24 Jul 91	94	60
20 Jun 91	84	46	25 Jul 91	92	59
21 Jun 91	84	44	26 Jul 91	94	59
22 Jun 91	83	46	27 Jul 91	95	61
23 Jun 91	84	44	28 Jul 91	96	60
24 Jun 91	67	45	29 Jul 91	101	65
25 Jun 91	78	45	30 Jul 91	96	66
26 Jun 91	77	50	31 Jul 91	86	73
27 Jun 91	74	59	1 Aug 91	92	68
28 Jun 91	72	47	2 Aug 91	93	64
29 Jun 91	75	45	3 Aug 91	92	58
30 Jun 91	87	55	4 Aug 91	87	54
1 Jul 91	96	63	5 Aug 91	85	51
2 Jul 91	100	68	6 Aug 91	86	52
3 Jul 91	104	73	7 Aug 91	87	50
4 Jul 91	103	71	8 Aug 91	92	57
5 Jul 91	103	68	9 Aug 91	95	59
6 Jul 91	95	67	10 Aug 91	94	59
7 Jul 91	93	65	11 Aug 91	88	64
8 Jul 91	91	64	12 Aug 91	81	68

NWC TP 7194

TABLE C-1 (Cont'd)

Date	High, °F	Low, °F	Date	High, °F	Low, °F
20 Aug 91	90	70	10 Sep 91	93	47
21 Aug 91	92	57	11 Sep 91	94	58
22 Aug 91	95	64	12 Sep 91	90	57
23 Aug 91	96	64	13 Sep 91	87	55
24 Aug 91	96	65	14 Sep 91	87	54
25 Aug 91	93	65	15 Sep 91	87	57
26 Aug 91	87	60	16 Sep 91	89	57
27 Aug 91	77	51	17 Sep 91	93	54
28 Aug 91	80	46	18 Sep 91	93	58
29 Aug 91	84	50	19 Sep 91	90	58
30 Aug 91	88	56	20 Sep 91	88	57
31 Aug 91	91	54	21 Sep 91	87	56
1 Sep 91	92	61	22 Sep 91	87	57
2 Sep 91	91	64	23 Sep 91	87	61
3 Sep 91	94	76	24 Sep 91	91	61
4 Sep 91	96	66	25 Sep 91	90	64
5 Sep 91	81	59	26 Sep 91	88	59
6 Sep 91	72	59	27 Sep 91	84	61
7 Sep 91	81	55	28 Sep 91	81	53
8 Sep 91	83	58	29 Sep 91	84	56
9 Sep 91	77	53	30 Sep 91	86	55

NWC TP 7194

TABLE C-2. Weather Station No. 1 Relative Humidity.

Date	High, %	Low, %	Date	High, %	Low, %
22 Oct 90	33.8	12.6	26 Nov 90	65.7	40.6
23 Oct 90	37.3	14.1	27 Nov 90	53.8	21.5
24 Oct 90	38.4	16.1	28 Nov 90	54.9	26.5
25 Oct 90	38.6	17.2	29 Nov 90	55.2	24.5
26 Oct 90	39.2	16.6	30 Nov 90	46.8	23.6
27 Oct 90	38.6	14.1	1 Dec 90	53.3	23.9
28 Oct 90	41.5	13.4	2 Dec 90	46.6	17.2
29 Oct 90	45.8	17.6	3 Dec 90	45.7	22.8
30 Oct 90	49.3	20.7	11 Dec 90	55.3	28.2
31 Oct 90	58.3	20.3	12 Dec 90	90.3	53.7
1 Nov 90	87.0	34.6	13 Dec 90	96.8	44.5
2 Nov 90	42.4	14.2	14 Dec 90	75.4	34.5
3 Nov 90	32.1	6.0	15 Dec 90	76.4	38.3
4 Nov 90	49.8	15.2	16 Dec 90	62.8	21.1
5 Nov 90	46.1	26.3	17 Dec 90	60.5	31.6
6 Nov 90	36.9	18.2	18 Dec 90	67.2	31.5
7 Nov 90	38.3	12.7	19 Dec 90	96.7	18.2
8 Nov 90	50.8	23.2	20 Dec 90	49.7	27.0
9 Nov 90	62.8	26.8	21 Dec 90	52.5	37.7
10 Nov 90	41.3	20.4	22 Dec 90	59.2	25.2
11 Nov 90	35.9	15.4	23 Dec 90	59.4	23.7
12 Nov 90	34.7	16.7	24 Dec 90	49.9	16.6
13 Nov 90	42.4	20.4	25 Dec 90	61.3	26.6
14 Nov 90	48.7	26.0	26 Dec 90	64.8	30.0
15 Nov 90	41.8	28.2	27 Dec 90	74.7	37.3
16 Nov 90	43.7	30.3	28 Dec 90	75.0	39.0
17 Nov 90	49.7	32.2	29 Dec 90	72.3	31.0
18 Nov 90	64.5	42.3	30 Dec 90	69.9	28.4
19 Nov 90	85.2	50.9	31 Dec 90	60.9	20.8
20 Nov 90	86.8	32.8	1 Jan 91	46.8	14.8
21 Nov 90	73.0	43.2	2 Jan 91	39.6	15.2
22 Nov 90	68.5	30.4	3 Jan 91	97.9	21.5
23 Nov 90	52.9	22.7	4 Jan 91	87.9	74.0
24 Nov 90	44.4	12.4	5 Jan 91	86.0	53.3
25 Nov 90	62.1	18.0	6 Jan 91	84.5	57.9

NWC TP 7194

TABLE C-2 (Cont'd)

Date	High, %	Low, %	Date	High, %	Low, %
7 Jan 91	80.5	53.5	11 Feb 91	54.0	22.8
8 Jan 91	84.8	42.9	12 Feb 91	50.8	22.3
9 Jan 91	82.2	50.2	13 Feb 91	52.8	26.4
10 Jan 91	83.9	37.2	14 Feb 91	58.5	35.9
11 Jan 91	85.1	38.2	15 Feb 91	60.7	32.1
12 Jan 91	85.6	35.1	16 Feb 91	53.2	26.5
13 Jan 91	79.0	29.6	17 Feb 91	81.7	24.2
14 Jan 91	75.1	32.2	18 Feb 91	45.4	40.6
15 Jan 91	68.9	24.5	19 Feb 91	49.3	18.4
16 Jan 91	35.8	14.1	20 Feb 91	56.0	21.9
17 Jan 91	54.1	21.2	21 Feb 91	37.5	12.3
18 Jan 91	74.7	36.1	22 Feb 91	35.4	20.3
19 Jan 91	74.0	36.1	23 Feb 91	27.9	16.3
20 Jan 91	74.4	28.6	24 Feb 91	29.3	14.0
21 Jan 91	49.8	37.9	25 Feb 91	29.0	17.8
22 Jan 91	47.0	18.3	26 Feb 91	33.7	18.3
23 Jan 91	59.0	16.3	27 Feb 91	91.8	31.6
24 Jan 91	58.8	26.7	28 Feb 91	91.2	74.6
25 Jan 91	55.2	23.5	1 Mar 91	88.7	34.7
26 Jan 91	64.3	29.5	2 Mar 91	75.2	71.5
27 Jan 91	50.8	17.8	3 Mar 91	81.2	42.1
28 Jan 91	53.1	17.6	4 Mar 91	87.6	31.5
29 Jan 91	32.8	17.0	5 Mar 91	55.8	22.5
30 Jan 91	39.4	16.6	6 Mar 91	73.3	24.1
31 Jan 91	32.6	17.4	7 Mar 91	57.7	12.0
1 Feb 91	28.9	12.0	8 Mar 91	77.4	21.4
2 Feb 91	58.5	19.3	9 Mar 91	68.0	19.1
3 Feb 91	69.6	31.6	10 Mar 91	80.5	8.8
4 Feb 91	56.6	22.8	11 Mar 91	75.7	12.8
5 Feb 91	54.8	23.3	12 Mar 91	87.7	29.3
6 Feb 91	54.4	22.8	13 Mar 91	80.5	31.5
7 Feb 91	44.1	23.9	14 Mar 91	57.4	25.3
8 Feb 91	50.8	23.2	15 Mar 91	90.8	27.9
9 Feb 91	53.8	22.1	16 Mar 91	89.2	22.8
10 Feb 91	60.1	24.2	17 Mar 91	85.4	27.7

NWC TP 7194

TABLE C-2 (Cont'd)

Date	High, %	Low, %	Date	High, %	Low, %
18 Mar 91	74.3	39.4	29 Apr 91	51.1	23.8
19 Mar 91	91.4	17.4	30 Apr 91	44.9	18.3
20 Mar 91	89.1	70.3	1 May 91	57.3	24.8
21 Mar 91	82.2	31.1	2 May 91	59.9	34.1
22 Mar 91	83.8	29.4	3 May 91	87.9	29.1
23 Mar 91	85.2	32.6	4 May 91	55.9	21.9
24 Mar 91	87.9	18.5	5 May 91	60.0	17.3
25 Mar 91	90.9	32.1	6 May 91	58.3	22.3
26 Mar 91	90.5	24.4	7 May 91	61.1	27.3
27 Mar 91	88.3	80.1	8 May 91	83.7	19.2
28 Mar 91	86.2	21.2	9 May 91	48.0	17.6
29 Mar 91	83.8	17.6	10 May 91	56.1	29.0
30 Mar 91	62.9	26.1	11 May 91	61.8	28.7
31 Mar 91	68.0	15.9	12 May 91	51.5	51.5
1 Apr 91	87.0	33.5	13 May 91	76.2	30.9
2 Apr 91	89.3	27.1	14 May 91	58.2	27.9
3 Apr 91	69.3	14.7	15 May 91	57.3	20.9
4 Apr 91	62.9	13.3	16 May 91	75.3	23.1
5 Apr 91	77.3	13.3	17 May 91	58.6	11.3
6 Apr 91	77.0	14.2	18 May 91	60.4	32.2
7 Apr 91	65.7	20.1	19 May 91	68.1	37.5
8 Apr 91	39.8	23.6	20 May 91	86.2	48.8
10 Apr 91	34.6	12.9	21 May 91	54.8	30.5
11 Apr 91	44.4	19.6	22 May 91	70.1	40.1
12 Apr 91	57.4	29.7	23 May 91	72.2	27.2
13 Apr 91	60.2	30.7	24 May 91	70.7	25.8
14 Apr 91	85.3	23.4	25 May 91	68.1	22.1
15 Apr 91	66.8	12.6	26 May 91	51.8	22.7
22 Apr 91	65.8	30.8	27 May 91	31.3	14.9
23 Apr 91	81.9	27.1	28 May 91	40.1	20.1
24 Apr 91	85.2	19.9	29 May 91	40.5	19.4
25 Apr 91	50.5	13.1	30 May 91	46.4	24.6
26 Apr 91	63.9	29.4	31 May 91	40.5	23.0
27 Apr 91	75.5	10.6	1 Jun 91	54.5	34.1
28 Apr 91	39.4	14.1	2 Jun 91	80.8	32.9

NWC TP 7194

TABLE C-2 (Cont'd)

Date	High, %	Low, %	Date	High, %	Low, %
3 Jun 91	63.5	26.1	8 Jul 91	84.2	12.5
4 Jun 91	70.2	21.1	9 Jul 91	83.2	20.2
5 Jun 91	59.0	25.9	10 Jul 91	55.4	20.5
6 Jun 91	53.0	19.3	11 Jul 91	37.0	16.2
7 Jun 91	44.3	17.8	12 Jul 91	35.4	14.6
8 Jun 91	54.4	16.4	13 Jul 91	53.3	16.4
9 Jun 91	38.2	16.9	14 Jul 91	46.7	9.9
10 Jun 91	33.4	14.9	15 Jul 91	50.3	27.6
11 Jun 91	37.7	21.5	16 Jul 91	35.9	19.0
12 Jun 91	54.6	15.6	17 Jul 91	49.2	19.3
13 Jun 91	44.2	16.3	18 Jul 91	44.3	25.7
14 Jun 91	50.0	17.2	19 Jul 91	64.2	26.0
15 Jun 91	53.5	18.3	20 Jul 91	68.6	24.0
16 Jun 91	49.4	17.9	21 Jul 91	60.8	23.1
17 Jun 91	44.2	16.0	22 Jul 91	41.3	16.9
18 Jun 91	54.5	16.2	23 Jul 91	40.5	16.7
19 Jun 91	55.2	16.7	24 Jul 91	53.6	17.7
20 Jun 91	47.0	18.9	25 Jul 91	53.2	19.0
21 Jun 91	44.9	20.6	26 Jul 91	49.6	23.5
22 Jun 91	44.2	20.9	27 Jul 91	36.1	18.9
23 Jun 91	54.6	20.6	28 Jul 91	36.3	14.3
24 Jun 91	54.7	28.9	29 Jul 91	32.6	15.9
25 Jun 91	65.7	28.9	30 Jul 91	46.5	25.1
26 Jun 91	61.0	33.0	31 Jul 91	67.3	43.1
27 Jun 91	60.4	40.5	1 Aug 91	56.2	30.0
28 Jun 91	85.0	46.2	2 Aug 91	51.2	13.3
29 Jun 91	95.8	31.5	3 Aug 91	29.1	15.7
30 Jun 91	52.6	20.9	4 Aug 91	44.2	19.3
1 Jul 91	32.7	16.9	5 Aug 91	57.2	13.8
2 Jul 91	30.0	15.5	6 Aug 91	51.3	23.2
3 Jul 91	30.4	15.2	7 Aug 91	66.2	14.1
4 Jul 91	32.9	15.2	8 Aug 91	49.8	17.8
5 Jul 91	32.5	17.6	9 Aug 91	41.5	18.0
6 Jul 91	34.0	23.8	10 Aug 91	46.5	22.5
7 Jul 91	72.5	31.5	11 Aug 91	47.6	32.1

NWC TP 7194

TABLE C-2 (Cont'd)

Date	High, %	Low, %	Date	High, %	Low, %
12 Aug 91	63.4	47.7	9 Sep 91	75.9	11.0
13 Aug 91	72.6	48.7	10 Sep 91	74.4	25.6
20 Aug 91	29.6	20.6	11 Sep 91	50.3	24.2
21 Aug 91	38.6	12.1	12 Sep 91	52.3	20.2
22 Aug 91	43.3	27.1	13 Sep 91	64.2	20.1
23 Aug 91	50.3	27.3	14 Sep 91	64.4	23.3
24 Aug 91	52.0	29.3	15 Sep 91	53.1	20.3
25 Aug 91	58.8	30.4	16 Sep 91	52.1	16.2
26 Aug 91	52.0	14.6	17 Sep 91	28.4	9.8
27 Aug 91	54.9	30.3	18 Sep 91	35.4	13.0
28 Aug 91	38.8	12.8	19 Sep 91	41.8	20.9
29 Aug 91	44.3	17.8	20 Sep 91	58.3	26.6
30 Aug 91	28.6	16.6	21 Sep 91	72.0	25.2
31 Aug 91	41.5	15.6	22 Sep 91	63.1	31.1
1 Sep 91	67.6	22.6	23 Sep 91	58.5	31.0
2 Sep 91	51.5	27.9	24 Sep 91	51.6	17.6
3 Sep 91	46.4	27.2	25 Sep 91	43.5	24.4
4 Sep 91	42.7	26.8	26 Sep 91	58.0	27.1
5 Sep 91	88.9	36.8	27 Sep 91	55.9	31.8
6 Sep 91	84.3	50.4	28 Sep 91	64.9	31.4
7 Sep 91	87.3	30.3	29 Sep 91	75.4	35.1
8 Sep 91	80.9	11.5	30 Sep 91	88.3	25.6

NWC TP 7194

TABLE C-3. Weather Station No. 1 Barometric Pressure Data.

Date	High, mbar	Low, mbar	Date	High, mbar	Low, mbar
1 Oct 90	893.5	889.8	5 Nov 90	895.7	889.9
2 Oct 90	890.4	886.2	6 Nov 90	897.0	885.1
3 Oct 90	894.3	886.8	7 Nov 90	899.2	891.7
4 Oct 90	896.9	894.3	8 Nov 90	901.4	898.9
5 Oct 90	895.7	889.2	9 Nov 90	902.7	900.1
6 Oct 90	889.3	886.6	10 Nov 90	901.3	899.1
7 Oct 90	893.3	886.6	11 Nov 90	901.8	899.2
8 Oct 90	896.6	893.4	12 Nov 90	901.9	898.4
9 Oct 90	901.7	898.1	13 Nov 90	898.4	892.4
10 Oct 90	901.4	891.9	14 Nov 90	893.6	890.5
11 Oct 90	892.4	891.9	15 Nov 90	899.8	893.7
12 Oct 90	893.5	892.3	16 Nov 90	900.0	896.7
13 Oct 90	892.8	890.3	17 Nov 90	897.1	892.4
14 Oct 90	890.7	890.3	18 Nov 90	892.4	889.0
15 Oct 90	891.8	890.2	19 Nov 90	889.3	886.5
16 Oct 90	890.2	888.5	30 Nov 90	896.7	894.8
17 Oct 90	894.4	889.3	1 Dec 90	898.1	894.9
18 Oct 90	894.0	888.3	2 Dec 90	902.2	897.8
19 Oct 90	891.1	886.2	3 Dec 90	903.9	901.1
20 Oct 90	896.5	891.1	4 Dec 90	902.6	899.5
21 Oct 90	898.5	896.6	5 Dec 90	900.8	898.0
22 Oct 90	897.9	892.2	6 Dec 90	903.1	900.9
23 Oct 90	896.4	892.4	7 Dec 90	902.0	899.4
24 Oct 90	898.3	896.3	8 Dec 90	900.8	898.6
25 Oct 90	897.6	895.0	9 Dec 90	900.0	897.1
26 Oct 90	895.8	894.1	10 Dec 90	897.3	893.2
27 Oct 90	897.6	894.7	11 Dec 90	892.9	891.2
28 Oct 90	895.8	892.0	12 Dec 90	892.2	887.9
29 Oct 90	894.1	891.0	13 Dec 90	891.9	889.2
30 Oct 90	895.8	892.0	14 Dec 90	891.5	888.3
31 Oct 90	892.6	888.1	25 Dec 90	896.4	895.6
1 Nov 90	891.1	887.0	26 Dec 90	896.7	894.6
2 Nov 90	895.4	890.9	27 Dec 90	897.1	887.8
3 Nov 90	900.1	895.4	28 Dec 90	887.7	879.8
4 Nov 90	901.4	895.8	29 Dec 90	897.6	881.6

NWC TP 7194

TABLE C-3 (Cont'd)

Date	High, mbar	Low, mbar	Date	High, mbar	Low, mbar
30 Dec 90	901.9	897.6	3 Feb 91	902.7	898.9
31 Dec 90	902.0	899.5	4 Feb 91	903.2	898.6
1 Jan 91	900.1	897.3	5 Feb 91	898.6	893.3
2 Jan 91	899.2	896.4	6 Feb 91	898.4	895.9
3 Jan 91	896.6	889.8	7 Feb 91	898.9	896.7
4 Jan 91	891.8	888.0	8 Feb 91	898.8	896.7
5 Jan 91	896.3	891.7	9 Feb 91	898.5	894.2
6 Jan 91	898.9	896.2	10 Feb 91	895.4	892.5
7 Jan 91	898.4	895.3	11 Feb 91	895.4	893.2
8 Jan 91	895.6	890.7	12 Feb 91	895.2	893.4
9 Jan 91	894.3	889.3	13 Feb 91	897.6	895.1
10 Jan 91	900.4	894.2	14 Feb 91	898.8	894.4
11 Jan 91	902.9	900.3	15 Feb 91	895.1	889.8
12 Jan 91	903.5	901.0	16 Feb 91	890.1	885.6
13 Jan 91	901.9	897.2	17 Feb 91	894.0	888.1
14 Jan 91	902.5	899.9	18 Feb 91	897.9	894.0
15 Jan 91	900.6	891.6	19 Feb 91	903.4	895.7
16 Jan 91	900.8	895.7	20 Feb 91	904.5	902.6
17 Jan 91	899.5	898.6	22 Feb 91	893.4	888.8
18 Jan 91	900.5	894.0	23 Feb 91	892.6	889.9
19 Jan 91	896.2	893.2	24 Feb 91	897.6	892.4
20 Jan 91	895.4	890.4	25 Feb 91	898.8	894.9
21 Jan 91	897.5	893.6	26 Feb 91	895.7	889.9
22 Jan 91	898.3	893.7	27 Feb 91	889.9	878.3
23 Jan 91	897.7	894.1	28 Feb 91	878.7	874.8
24 Jan 91	897.0	893.9	1 Mar 91	885.8	872.0
25 Jan 91	896.1	893.2	2 Mar 91	898.3	885.9
26 Jan 91	895.9	892.9	3 Mar 91	898.6	895.1
27 Jan 91	894.4	890.3	4 Mar 91	895.9	886.5
28 Jan 91	890.2	886.3	5 Mar 91	890.4	887.7
29 Jan 91	899.5	888.1	6 Mar 91	893.9	890.1
30 Jan 91	902.4	899.3	7 Mar 91	897.0	892.1
31 Jan 91	902.6	899.7	8 Mar 91	896.6	893.3
1 Feb 91	899.9	897.5	9 Mar 91	894.5	888.8
2 Feb 91	899.1	896.8	10 Mar 91	889.8	883.5

NWC TP 7194

TABLE C-3 (Cont'd)

Date	High, mbar	Low, mbar	Date	High, mbar	Low, mbar
11 Mar 91	893.9	883.9	16 Apr 91	887.0	883.4
12 Mar 91	896.1	891.4	17 Apr 91	889.9	887.0
13 Mar 91	891.4	880.4	18 Apr 91	891.4	887.9
14 Mar 91	885.3	880.8	19 Apr 91	891.7	888.6
15 Mar 91	884.9	877.7	20 Apr 91	890.8	885.8
16 Mar 91	892.2	885.0	21 Apr 91	891.5	888.3
17 Mar 91	894.6	890.2	22 Apr 91	890.5	887.3
18 Mar 91	891.8	880.6	23 Apr 91	889.5	885.6
19 Mar 91	884.7	876.4	24 Apr 91	890.0	884.2
20 Mar 91	884.7	877.9	25 Apr 91	886.8	883.4
21 Mar 91	890.0	878.6	26 Apr 91	892.4	886.8
22 Mar 91	895.8	890.0	27 Apr 91	892.0	889.1
23 Mar 91	895.2	889.8	28 Apr 91	894.7	891.1
24 Mar 91	891.1	883.4	29 Apr 91	892.3	887.9
25 Mar 91	883.5	881.2	30 Apr 91	893.7	886.5
26 Mar 91	884.0	879.9	1 May 91	886.9	882.3
27 Mar 91	892.2	882.3	2 May 91	886.6	882.9
28 Mar 91	896.6	892.2	3 May 91	892.8	886.6
29 Mar 91	895.6	892.8	4 May 91	898.0	892.8
30 Mar 91	899.2	895.6	5 May 91	899.4	894.3
31 Mar 91	897.9	891.2	6 May 91	894.5	890.5
1 Apr 91	895.3	888.6	7 May 91	889.8	887.1
2 Apr 91	897.9	894.6	8 May 91	892.4	888.4
3 Apr 91	899.7	896.4	9 May 91	889.2	881.7
4 Apr 91	900.1	896.2	10 May 91	886.1	882.3
5 Apr 91	896.2	890.6	11 May 91	889.4	885.7
6 Apr 91	891.6	885.4	12 May 91	893.1	889.0
7 Apr 91	890.8	887.0	13 May 91	894.9	884.7
8 Apr 91	896.2	890.8	14 May 91	891.2	884.4
10 Apr 91	888.6	882.0	15 May 91	893.5	889.6
11 Apr 91	890.8	888.6	16 May 91	891.0	885.0
12 Apr 91	893.8	890.7	17 May 91	887.4	884.6
13 Apr 91	895.3	891.7	18 May 91	888.4	884.3
14 Apr 91	893.3	885.1	19 May 91	890.5	886.5
15 Apr 91	886.3	881.3	20 May 91	888.8	887.2

NWC TP 7194

TABLE C-3 (Cont'd)

Date	High, mbar	Low, mbar	Date	High, mbar	Low, mbar
21 May 91	891.2	886.8	25 Jun 91	889.7	885.7
22 May 91	891.8	891.2	26 Jun 91	889.6	884.5
23 May 91	892.0	888.9	27 Jun 91	886.0	883.3
24 May 91	893.6	890.1	28 Jun 91	887.9	884.7
25 May 91	893.6	888.2	29 Jun 91	890.4	886.8
26 May 91	889.7	884.0	30 Jun 91	891.8	888.4
27 May 91	885.6	880.7	1 Jul 91	891.0	888.6
28 May 91	891.2	883.9	2 Jul 91	892.4	889.4
29 May 91	892.1	882.4	3 Jul 91	892.4	888.5
30 May 91	882.8	873.9	4 Jul 91	890.6	886.0
31 May 91	885.3	881.2	5 Jul 91	888.6	884.9
1 Jun 91	889.3	884.4	6 Jul 91	890.5	887.6
2 Jun 91	889.8	886.8	7 Jul 91	892.2	888.8
3 Jun 91	889.8	887.0	8 Jul 91	893.2	891.2
4 Jun 91	889.0	884.7	9 Jul 91	892.2	885.4
5 Jun 91	887.5	885.0	10 Jul 91	891.2	887.8
6 Jun 91	890.5	887.6	11 Jul 91	893.5	890.2
7 Jun 91	892.6	888.6	12 Jul 91	894.9	891.6
8 Jun 91	890.0	886.2	13 Jul 91	893.2	888.5
9 Jun 91	890.9	888.4	14 Jul 91	892.0	888.4
10 Jun 91	891.4	887.8	15 Jul 91	893.0	889.5
11 Jun 91	890.1	886.3	16 Jul 91	895.0	891.5
12 Jun 91	889.4	884.5	17 Jul 91	893.9	888.7
13 Jun 91	887.8	882.9	18 Jul 91	890.8	885.9
14 Jun 91	889.9	885.6	19 Jul 91	889.9	886.3
15 Jun 91	891.9	888.4	20 Jul 91	892.1	889.3
16 Jun 91	892.7	888.6	21 Jul 91	894.9	891.5
17 Jun 91	891.9	888.5	22 Jul 91	894.4	890.5
18 Jun 91	891.1	887.0	23 Jul 91	893.3	889.6
19 Jun 91	889.8	886.5	24 Jul 91	892.5	887.5
20 Jun 91	891.8	887.8	25 Jul 91	890.9	887.3
21 Jun 91	889.5	885.3	26 Jul 91	894.0	890.2
22 Jun 91	889.9	886.3	27 Jul 91	896.9	893.7
23 Jun 91	889.5	885.6	28 Jul 91	897.1	892.7
24 Jun 91	888.1	884.6	29 Jul 91	894.5	890.5

NWC TP 7194

TABLE C-3 (Cont'd)

Date	High, mbar	Low, mbar	Date	High, mbar	Low, mbar
30 Jul 91	894.7	891.4	29 Aug 91	897.6	895.0
31 Jul 91	897.3	892.8	30 Aug 91	896.4	892.2
1 Aug 91	894.3	888.7	31 Aug 91	893.7	889.9
2 Aug 91	892.2	887.1	1 Sep 91	893.5	890.1
3 Aug 91	891.5	887.9	2 Sep 91	896.4	892.6
4 Aug 91	891.5	887.3	3 Sep 91	897.8	894.0
5 Aug 91	890.1	886.4	4 Sep 91	895.4	889.0
6 Aug 91	891.0	888.1	5 Sep 91	892.2	889.3
7 Aug 91	894.7	891.0	6 Sep 91	893.2	890.4
8 Aug 91	896.2	891.8	7 Sep 91	895.0	890.7
9 Aug 91	893.0	886.8	8 Sep 91	892.4	886.2
10 Aug 91	891.7	887.5	9 Sep 91	886.6	882.7
11 Aug 91	895.3	891.8	10 Sep 91	892.1	886.6
12 Aug 91	897.5	895.0	11 Sep 91	893.2	890.1
13 Aug 91	897.3	891.2	12 Sep 91	894.1	890.4
14 Aug 91	893.4	889.2	13 Sep 91	893.2	888.8
15 Aug 91	893.4	889.7	14 Sep 91	891.2	888.0
16 Aug 91	895.5	891.7	15 Sep 91	894.5	890.7
17 Aug 91	895.3	890.8	16 Sep 91	896.0	892.0
18 Aug 91	893.3	889.9	17 Sep 91	892.3	890.4
19 Aug 91	894.2	891.2	18 Sep 91	893.0	889.4
20 Aug 91	895.6	892.9	19 Sep 91	893.9	889.9
21 Aug 91	897.6	894.6	20 Sep 91	893.3	888.5
22 Aug 91	897.0	891.5	21 Sep 91	892.2	889.2
23 Aug 91	894.0	888.6	22 Sep 91	896.2	891.2
24 Aug 91	894.1	889.8	23 Sep 91	896.5	893.1
25 Aug 91	893.8	889.4	24 Sep 91	896.6	894.5
26 Aug 91	891.7	887.7	25 Sep 91	896.4	891.6
27 Aug 91	891.1	887.9	26 Sep 91	894.4	893.4
28 Aug 91	895.2	891.2			

NWC TP 7194

Appendix D
WELL TEMPERATURE DATA

NWC TP 7194

TABLE D-1. Well 4H-8 (Coso Well No. 1) Temperature.

24 January 1991		6 June 1991	
Depth, ft	Temp, °F	Depth, ft	Temp, F°
0	207.8	0	171.6
10	206.8	5	175.6
45	207.8	15	178.7
55	209.8	20	179.3
65	210.99	40	179.8
70	211.99	45	180.9
75	217.72	60	181.5
80	220.2	65	182.1
85	221.49	70	194.0
90	222.8	75	197.9
95	223.1	80	200.4
100	223.6	85	202.2
105	224.1	90	204.1
110	224.8	95	204.9
115	225.6	100	205.9
120	224.2	105	206.8
125	226.4	110	208.8
145	226.9	115	209.8
150	226.5	120	210.9
160	226.1	125	210.9
165	225.7	150	211.9
170	225.7	160	213.1
175	225.0	170	214.2
185	224.8	184	215.4

NWC TP 7194

TABLE D-2. Well 4K-1 Temperature.

24 January 1991		6 June 1991	
Depth, ft	Temp, °F	Depth, ft	Temp, F°
0	204.9	0	205.9
5	204.9	5	205.9
10	204.9	10	205.9
25	204.9	25	205.9
50	204.9	50	206.8
52	207.8	52	208.9
55	208.8	55	208.9
57	208.8	57	209.9
60	211.0	60	211.0
70	212.0	70	211.0
73	212.0	73	213.09
77	214.2	77	213.09
80	215.4	80	214.2

NWC TP 7194

TABLE D-3. Well 4P-1 Temperature.

24 January 1991		6 June 1991	
Depth, ft	Temp, °F	Depth, ft	Temp, F°
5	204.9	0	197.9
10	205.9	5	205.9
25	205.9	10	205.9
52	205.9	25	205.9
53	205.9	52	206.9
54	205.9	53	207.7
56	206.8	54	208.8
57	206.8	56	208.8
60	208.8	57	209.8
65	211.9	60	212.9
70	214.2	65	215.4
80	214.2	70	215.4
85	215.4	80	216.5
89	215.4	85	218.9
90	215.4	89	221.4
93	215.4	90	221.4
95	222.8	93	225.6
97	222.8	95	226.9
100	222.8	97	236.5
101	222.8	100	236.5
		101	

NWC TP 7194

TABLE D-4. Well 4A-4 Temperature.

24 January 1991		6 June 1991	
Depth, ft	Temp, °F	Depth, ft	Temp, F°
5	205.9	0	180.9
10	205.9	5	205.9
18	207.8	10	205.9
20	207.8	18	205.9
23	208.9	20	207.8
25	209.8	23	207.8
26	213.9	25	209.8
27	214.2	26	209.9
28.5	214.2	27	209.9
30	214.2	28.5	213.9
31	214.2	30	214.2
		31	215.4

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